General and Specific Avoidance Coping:
The Development and Validation of a New Scale.

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"In our privileged lives, we are uniquely smart enough to have invented these stressors and uniquely foolish enough to have let them, too often, dominate our lives. Surely we have the potential to be uniquely wise enough to banish their stressful hold."

– Robert M. Sapolsky

"In every life we have some trouble
When you worry you make it double
Don't worry, be happy....."

- *Bobby McFerrin*

"The significant problems we have cannot be solved at the same level of thinking with which we created them."

- *Albert Einstein*

"Facing your fears builds strength, but running away from them makes for an excellent cardio workout"

- *Anonymous*

"When the only tool you have is a hammer, every problem begins to resemble a nail."

- *Abraham Maslow*

"Hakuna Matata" – A Swahili phrase meaning "there are no worries."

- *Made famous by the movie "The Lion King"*

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Abstract

The impact of a sustained stress response on psychological and physical health is well established. However, the moderating role in this relationship of coping, and especially maladaptive avoidance coping, has been hampered by psychometric shortcomings in existing coping scales. Some of these shortcomings include generating items based on theory or face-validity alone, the extraction of too many factors, and the absence of confirmatory factor analytic (CFA) evidence for the obtained structure. This thesis describes the development of a new avoidance coping scale, the General and Specific Avoidance Questionnaire (GSAQ), to address these issues in multidimensional avoidance coping scales in particular.

In contrast to previous scales, the GSAQ items were derived from a scenario technique which elicits responses from participants' experience. Exploratory factor analysis extracted a three-factor solution comprising General, Emotional, and Conflict Avoidance. The scales showed satisfactory reliability, and the structure was confirmed by CFA in independent English and Spanish samples. Concurrent validation and an exploration of differences between high and low avoiders showed that General Avoidance and Conflict Avoidance related to criterion measures in predictable ways, but Emotional Avoidance showed an unexpected pattern.

An analysis of the role of avoidance coping in deliberate self-harm showed no statistically significant effects in a non-clinical university student sample, but the overall trend suggested that self-harmers do, on average, score higher on avoidance coping than non-self-harmers. A subsequent laboratory study introducing research participants to a mild laboratory stressor suggested that individuals who score high on avoidance coping showed greater cardiovascular reactivity compared to low conflict avoiders.

The findings reported in this thesis show that the GSAQ is a reliable tool to use for future research on the role of multidimensional avoidance coping in psychological and physical health.

List of Abbreviations

ACTH	-	Adrenocorticotropic Hormone
ANCOVA	-	Analysis of Covariance
ANOVA	-	Analysis of Variance
ASD	-	Acute Stress Disorder
AVCOP	-	Avoidance Coping
BPD	-	Borderline Personality Disorder
CAR	-	Cortisol Awakening Response
CAQ	-	Cognitive Avoidance Questionnaire
CBAS	-	Cognitive-Behavioral Avoidance Scale
CCCS	-	Cross-Cultural Coping Scale
CFA	-	Confirmatory Factor Analysis
CHF	-	Congestive Heart Failure
CISS	-	Coping Inventory for Stressful Situations
COPE	-	Coping Orientations to Problems Experienced
CRF	-	Corticotropin Releasing Factor
CRH	-	Corticotropin Releasing Hormone
CRI	-	Coping Responses Inventory
CSI	-	Coping Strategy Indicator
CSQ	-	Coping Styles Questionnaire
DASS	-	Depression Anxiety Stress Scales
DBP	-	Diastolic Blood Pressure
DETCOP	-	Detachment Coping
DNA	-	Deoxyribonucleic acid
DSH	-	Deliberate Self-Harm
DSHI	-	Deliberate Self-Harm Inventory
DSM	-	Diagnostic and Statistical Manual of Mental Disorders
EAM	-	Experiential Avoidance Model
ECQ	-	Emotion Control Questionnaire
EFA	-	Exploratory Factor Analysis
e.g.	-	For example
EMCOP	-	Emotion Coping

GAD	-	Generalised Anxiety Disorder
GSAQ	-	General and Specific Avoidance Questionnaire
HEC	-	Human Ethics Committee
HPA	-	Hypothalamic Pituitary Adrenal
HPAA	-	Hypothalamic Pituitary Adrenal Axis
HR	-	Heart Rate
i.e.	-	"That is" or "in other words"
I-RS	-	Inhibition-Rumination Scale
MCI	-	Multidimensional Coping Inventory
MCI-R	-	Mainz Coping Inventory (Revised)
MCM	-	Model of Coping Modes
MEAQ	-	Multidimensional Experiential Avoidance Questionnaire
PAF	-	Principal Axis Factoring
PCI	-	Proactive Coping Inventory
PSI	-	Physical Symptoms Inventory
PTSD	-	Posttraumatic Stress Disorder
RATCOP	-	Rational Coping
SLDQ	-	Scenario and Life Domain Questionnaire
SNS	-	Sympathetic Nervous System
SPSS	-	Statistical Package for the Social Sciences
SBP	-	Systolic Blood Pressure
WCC	-	Ways of Coping Checklist
WCQ	-	Ways of Coping Questionnaire

Chapter 1: Introduction and Literature Review[1]

1.1 Introduction

The central aim of the research project described in this thesis was to develop a new, robust and reliable index of avoidance coping to address current methodological shortcomings, and to assess the relationship between avoidance coping and a variety of psychological and physiological indices. Avoidance is widely acknowledged as an important yet poorly understood moderator in the link between stress and health, and clarifying the underlying structure of avoidance coping should contribute significantly to our understanding of the role that coping plays in moderating stress responses. A further aim of this thesis is to introduce a reliable and validated Spanish version of the new avoidance scale, in order to facilitate future cross-cultural studies of avoidance coping.

Avoidance coping has been described in different ways by researchers in the past. For example, Ottenbreit and Dobson (2004) explained the construct of avoidance as refraining from, or escaping from, an action, person or thing, whereas Weinstein, Brown and Ryan (2009) defined avoidance coping very broadly as a defensive form of regulation that involves ignoring, distorting, or escaping threatening stimuli. Others (for example, Lee and Lee, 2001) include in avoidance coping the selective inattention to unpleasant aspects of events and heightened attention to pleasant features of events, to the extent that the problem recedes from awareness. From an occupational perspective, Lee and Lee (2001) added that avoidant individuals downplay the importance of work problems relative to other life events.

In an earlier description of experiential avoidance, Hayes, Wilson, Gifford, Follette, & Strosahl (1996) describe it as occurring when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioural predispositions), and takes steps to alter the form or frequency of these events as well as the contexts that lead to similar events.

[1] The main findings of chapters 1, 2, 3, 4, and 5 were accepted and presented as a paper at the 33rd International Conference of the Stress and Anxiety Research Society (STAR), Palma de Mallorca, Spain (2 – 4 to July 2012).

However, the latter part of the definition would seem to relate to proactive rather than pure avoidance coping, and overall it is clear that while a range of definitions of avoidance coping have been offered, they have failed to produce a coherent view of the construct. In the interests of clarifying the conceptual issues, for the purposes of this thesis avoidance coping is defined broadly as cognitive and behavioural attempts to avoid dealing with a situation, person, emotion, thought or other entity across both social and non-social settings, and can involve cognitive or behavioural distraction and suppression or focussing only on positive aspects of a situation. In other words, avoidance coping is a conscious or subconscious effort which leads to not dealing with a problem. On the other hand, if a person is sufficiently rational and has the presence of mind to focus on another problem whilst seemingly avoiding a concurrent but less urgent problem, this may be construed as proactive coping by focusing attention on the immediate issue requiring attention. If the avoided concurrent problem was significant and is not returned to, the original proactive nature of the coping strategy becomes avoidance. Thus, avoidance coping could form part of a strategic overall coping process, but when it is the only coping strategy used as part of the repertoire of coping it becomes maladaptive.

As a simple illustrative example, focussing on personal emotional responses in emergencies at the expense of attending to the injured would not be appropriate, while a proactive strategy would be to avoid emotional preoccupations whilst dealing with the consequences of the emergency. However, if after a number of months or years one still avoids dealing with the distressing emotions and memories associated with, for example, the car accident and perhaps loss of a loved one this becomes maladaptive avoidance, just as refraining from driving again or forming close relationships for fear of experiencing similar situations would be. In this example, avoiding dealing with emotional trauma and memories could thus lead to other forms of behavioural avoidance that impact on an individual's functioning.

In this introductory chapter, the concepts of stress and coping will briefly be explored, as well as the neuropsychophysiological links between stress, coping and health. An in-depth review of the literature on all aspects relating to health, illness, stress and coping is beyond the scope of this thesis; instead, the focus is primarily

on the role of avoidance coping in moderating hypothalamic-pituitary-adrenal activity as an indicator of physiological responses to stress.

For clarity it is worthwhile to note that throughout the thesis non-clinical samples have been recruited. In the context of the thesis project, non-clinical samples refer to samples collected from non-clinical settings, rather than samples with no evidence of clinical conditions, either physical or psychological. However, as stated in the relevant chapters, participants indicated that they fall outside the severe or extremely severe range as measured by the Depression Anxiety and Stress Scale (DASS21) used in these studies.

1.2 Defining Stress

Stress has commonly been defined in one of three ways or facets (Jex, Beehr, & Roberts, 1992): as a stimulus, as a response, or as a stimulus-response interaction.

As a *stimulus*, stress is an environmental event or external force exerted on a person, which requires an adaptive response (Jex, *et al*., 1992). Borrowing from materials science models, various authors have argued that the term "strain" should have been used instead of stress (for example Lazarus, 1993; Sapolsky, 2004). In this context, strain would represent the potentially harmful effect or consequence of the stress force on that person (Kahn & Quinn, 1970; Lazarus, 1966, in Jex, *et al*., 1992). Indeed, Jex, *et al*. (1992) recommended that the word "stress" should be excluded from scales and questionnaire items because of these confounding properties. In the second approach, defining stress as a *response* corresponds to what is referred to as strain in the previous paragraph - in other words, it is the person's response to the external force or environmental event (Jewell, 1998), and may be psychological, physiological or behavioural (Jex, *et al*., 1992).

Finally, defining stress as *stimulus-response interaction*, Lazarus (1990) takes the view that stress is neither in the person nor in the environment, but rather in the relationship between them: an environmental factor exerts a demand, which leads to the person appraising the relationship between that and their ability to respond, and

then mobilising coping responses to manage the perceived person-environment relationship (Lazarus, 1990). The latter in turn might influence subsequent appraisal of the relationship and affect the type and intensity of the stress response, and Lazarus (1990, 1993) emphasised the important mediating role of coping strategies in determining the immediate and long-term effects of this interdependent "stress system" on the mind and body (Lazarus, 1993). These effects will be returned to in more detail later in the thesis.

1.3 General Coping and Coping Scales

Coping is a person's ongoing cognitive and behavioural efforts to manage demands that are appraised as threatening (Ben-Zur, 1999; Lazarus 1966, 1981; Lazarus & Folkman 1984; Lazarus & Launier 1978, in Lazarus, 1993; Terry, 1994), and also refers to the specific strategies aimed at regulating responses to stressful situations (Larsen, 2000; Weinstein, Brown, & Ryan, 2009). Coping strategies appear to have a major role to play in moderating an individual's physical and psychological well-being when confronted by negative and stressful life events (Endler & Parker, 1990; Miller, Brody, & Summerton, 1988), but the evidence supporting the effect remains equivocal (Baum & Posluszny, 1999; Ottenbreit & Dobson, 2004). Furthermore, scales for assessing coping strategies have been shown to suffer from a variety of psychometric problems, and the main scales and their shortcomings will briefly be reviewed in this section.

1.3.1 The Ways of Coping Checklist (WCC)

The self-report Ways of Coping Checklist consists of 68 items describing a broad range of cognitive and behavioural coping strategies individuals may use when they have to deal with stress during a specific situation (Folkman & Lazarus, 1980). The items were derived from various sources, including suggestions by Lazarus and his colleagues (Lazarus, 1966; Lazarus & Launier, 1978, in Folkman & Lazarus, 1980) as well as suggestions from the coping literature (see Folkman & Lazarus, 1980, for coping literature they have consulted).

According to Folkman and Lazarus (1980) the WCC items are classified into two categories, problem-focussed and emotion-focussed, although it also included items from domains including avoidance and suppression (Folkman & Lazarus, 1980). The scale was subsequently revised (Folkman, 2003; Folkman & Lazarus, 1985, Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986), and factor analysis of the revised item pool yielded eight factors: Problem-focussed coping (11 items); Emotion-focussed coping, comprising subscales for Wishful thinking (5 items), Distancing (6 items), Emphasising the Positive (4 items), Self-blame (3 items), Tension-reduction (3 items), and Self-isolation (3 items); and Mixed Problem- and Emotion-focussed Coping, including Seeking social support (7 items).

The main issue with this structure is that scales with so few items – only three in some instances – are unlikely to provide an adequate sample of the domain in question. These and other shortcomings led to further revising the scale as the Ways of Coping Questionnaire.

1.3.2 The Ways of Coping Questionnaire (WCQ)

Folkman, *et al*. (1986) interviewed middle-aged married couples five times over six months, asking them to describe the most stressful encounter they had to deal with in the previous seven days as well as completing the Ways of Coping scale each time. Three sets of factor analyses performed on the data all yielded similar factor patterns, but some items with marginal factor loadings and items that did not load consistently on the same factor were removed before a final factor analysis which resulted in 50 items spread across eight factors (Folkman, *et al*., 1986; Sørlie & Sexton, 2001): Confrontive coping; Distancing; Self-control; Seeking social support; Accepting responsibility; Escape-avoidance; Planful problem-solving; and Positive reappraisal

Folkman (2003) argues that the advantage of the new scale is that the factor analyses were based on a broader sampling of participants and different stressful encounters (Sørlie & Sexton, 2001), but as with the Ways of Coping Checklist, the Ways of Coping Questionnaire has been the subject of widespread criticisms,

including the format of the response items and the factor structure (e.g. Edwards & O'Neill, 1998; Parker, Endler, & Bagby, 1993).

1.3.3 Coping Orientation to Problems Experienced (COPE)

Starting from a theoretical perspective, Carver, Scheier and Weintraub (1989) argued that none of the existing scales they reviewed sampled all of the specific domains they had identified theoretically. Many of the items lacked focus or were ambiguous - for example, the WCC item "*I did something which I didn't think would work, but at least I was doing something*" doesn't indicate whether the respondent ascribed greater importance to performing an action given the situation, or to the fact that the action might not elicit the desired outcomes. To address the issues the authors developed the COPE instrument by incorporating 13 conceptually distinct scales: Active coping; Planning; Suppression of competing activities; Restraint coping; Seeking social support for instrumental reasons; Seeking social support for emotional reasons; Focussing on and venting of emotions; Behavioural disengagement; Helplessness; Positive reinterpretation and growth; Denial; Acceptance; and Turning to religion (Carver, *et al*., 1989).

The scale was refined by administering and re-administering the COPE, revising or discarding items with weak factor loadings and adding additional items. Factor analysis of responses to the final item pool resulted in 11 factors: Active coping & planning; Suppression of competing activities; Restraint coping; Seeking social support for instrumental reasons and Seeking social support for emotional reasons; Positive reinterpretation and growth; Acceptance; Turning to religion and humour; Focus on and venting of emotions; Denial; Behavioural disengagement and Mental disengagement; Alcohol-drug disengagement (Carver, *et al*., 1989; Sica, Novara, Dorz, & Sanavio, 1997):

The COPE has been widely used as a research tool in areas such as sport-related stress and drug addiction (Hasking & Oei, 2002), but the structure of the scale has been questioned. For example, the COPE developers have used the Kaiser-Guttman rule for factor extraction, which leads to an over-extraction of factors comprising of

too few items (Lyne and Roger, 2000). Indeed, reanalysis of the COPE factors resulted in just three factors, Rational coping, Emotion coping and Avoidance (Lyne and Roger, 2000). DeVellis (2003) has pointed out that this kind parsimonious account of the factors is what scale developers should seek to obtain - in other words, finding out what the most influential sources of variation underlying a set of items are should be the aim of scale development.

1.3.4 Multidimensional Coping Inventory (MCI)

Responding to the widespread criticism of coping scales, Endler and Parker (1990) developed the Multidimensional Coping Inventory (MCI). Items were generated by psychologists and graduate psychology students, and factor analysis of the final item pool led to a final 44-item measure with three distinct factors: Task-oriented coping behaviours (19 items), Emotion-oriented coping behaviours (13 items), and Avoidance coping behaviours (12 items).

The three scales showed low correlations with each other, and the authors presented validation studies comparing the MCI with the Ways of Coping Questionnaire (WCQ, Folkman & Lazarus, 1985) and assessing criterion validity by comparing the MCI with measures of depression, anxiety, Type A behaviour, neuroticism and extraversion (Endler & Parker, 1990). As with many coping scales, items were generated by psychologists and graduate psychology students by evaluating existing coping scale items and coping literature available at the time (Endler & Parker, 1990). There is no report of a more robust confirmatory factor analysis to validate the structure obtained by means of principle components analysis. The samples used during the factor analysis and concurrent validation both consisted of undergraduate psychology students, which further brings it's generalisation into question. Roger, Jarvis, & Najarian (1993) concluded that there appears to be an overlap between the factors that impact negatively on the ability to distinguish between the different factors of the MCI.

1.3.5 Coping Inventory for Stressful Situations (CISS)

Following on from the MCI, Endler and Parker (1994) proposed an amended scale entitled the Coping Inventory for Stressful Situations (CISS - see Endler & Parker, 1993 for a review). The 48-item CISS has three scales assessing the same task-oriented, emotion-oriented and avoidance-oriented coping strategies (Endler & Parker, 1999; Endler, Parker, & Summerfeldt, 1998), with each scale comprising 16 items. Separate factor analysis of the avoidance scale yielded two distinct subscales for *distraction* (8 items) and *social diversion* (5 items) (Endler & Parker, 1999).

Endler and Parker (1999) further explored the factor structure of the CISS and compared scores on the three factors with measures of basic coping styles and various measures of psychopathology. They also examined the relationship between the CISS and situation-specific coping responses used in two different stressful situations, and the overall outcome of the research confirmed the earlier factor structure as well as establishing the validity of the scale (Endler & Parker, 1999).

Steed (1998) has noted that the CISS can be used to measure both general trait coping style and situational-specific coping responses by changing the instructions given to participants, but that it would not be appropriate for use in all populations (for example, "gone window shopping" for samples of prisoners). Some of the avoidant scale items may also represent ordinary behaviours rather than coping strategies, such as "watch a movie". Fifteen of the 16 avoidance items are regarded as behavioural avoidance, which might account for the variable results in studies exploring the link between avoidance coping and psychological distress; Steed (1998) suggests that cognitive avoidance may be a better indicator of dysfunctional avoidance coping.

1.3.6 Coping Strategy Indicator (CSI)

Amirkhan (1990) compiled a list of coping items from existing measures of coping (especially the Ways of Coping Checklist described earlier), personal research and

also suggestions from colleagues and students. Factor analysis of the 161 responses produced three factors: an instrumental, problem directed strategy; a strategy of turning to others for comfort, advice or human contact; and an avoidant strategy involving either physical or psychological withdrawal through distraction or fantasy (Amirkhan, 1990). Subjecting the 63 highest-loading items to further factor analysis yielded factors for problem solving, seeking support, and avoidance.

The 36 factor markers in the previous analyses were then factor analysed in turn, which led again to the same 3-factor model with 11 items per scale (Amirkhan, 1990), and confirmatory factor analysis of this final version confirmed the 3-factor model. The advantages that Amirkhan (1990) claims for the CSI are that the scales are independent of one another and that it is less affected by demographic factors, recall problems and social desirability biases than other scales, but he does acknowledge that the CSI may not be relevant for assessing chronic hassles or only event-specific coping strategies. A further criticism is that the CSI - as with most coping scales - only measures a select number of possible coping items (Steed, 1998), although the samples used during the scale development were heterogeneous and large, all were also skewed in a similar direction, which affects the scale norms if it is to be used in non-similar samples (Amirkhan, 1990). The results from the confirmatory factor analysis run on the data consistently indicated inadequate goodness of fit indices (GFI < 0.90 and in most instances < 0.85), and settling for a three-factor model best fit was based on a Chi-square difference test in all instances (see Amirkhan, 1990).

1.3.7 Coping Responses Inventory (CRI)

Like the WCQ (Folkman & Lazarus, 1985), the Coping Responses Inventory (CRI - Moos, Brennan, Fondacaro, & Moos, 1990) measures how individuals cope with specific situations, so it is an episodic or situation-specific scale (Moos, 1995). The CRI measures eight six-item dimensions divided between Approach coping strategies (Logical analysis, Positive reappraisal, Guidance/Support, and Problem solving) and Avoidance coping strategies (Cognitive avoidance, Resigned acceptance, Alternative rewards, and Emotional discharge).

A comprehensive review on the development of the CRI and its psychometric properties are provided by Moos, *et al*. (1990), Moos (1995), Moos (2000), and Aguilar-Vafaie & Abiari (2007). Internal consistency of the eight scales was reasonably low (see Moos, *et al.*, 1990) and ranged between 0.61 and 0.74. It is also situation-specific, assessing an individual's responses on a 4-point Likert scale based on selecting a recent focal stressor (Moos, 1995). There is no evidence for confirmatory factor analysis of the CRI.

1.3.8 Mainz Coping Inventory (MCI-R)

The Mainz Coping Inventory (MCI-R) comprises 80 items derived from the Model of Coping Modes (MCM), which explores individual differences in the regulation of behaviour under stress (Krohne, Egloff, Varner, Burns, Weidner, & Ellis, 2000; Sexton & Dugas, 2008). The MCI-R assesses vigilance - an intensified search for and processing of stress-related information to reduce uncertainty – and cognitive avoidance – averting attention from cues relevant to the threat (Krohne, *et al*., 2000).

Variants of the same vigilance or avoidance coping responses are presented in a varied order for each of eight threat scenarios (Sexton & Dugas, 2008) and the configuration of scores on the two dimensions is referred to as the person's mode of coping, categorised in four main modes of *Consistent vigilance or sensitisation* (high vigilance, low avoidance); *Consistent cognitive avoidance or repression* (low vigilance, high avoidance); *Fluctuating coping or high anxiety* (high vigilance, high avoidance); and *Situation-related coping or low anxiety* (low vigilance, low avoidance). The modes are reviewed in Krohne, *et al*. (2000).

The MCI-R can be used to distinguish between ego threat (MCI-E) or physical threat (MCI-P) modes (Krohne, *et al*., 2000; Sexton & Dugas, 2008), and five vigilant and five cognitive coping strategies are assigned to each of the scenarios. Items are summed separately for vigilance and cognitive avoidance across the scenarios of one subset, yielding four scores of coping, and two total scores for

vigilance and cognitive avoidance (Krohne, *et al*., 2000). Validation studies yielded satisfactory reliability coefficients, and confirmatory factor analysis (CFA) provided support for the independence of the vigilance and cognitive avoidance factors (Krohne, *et al*., 2000) but less convincing support for a two-factor structure of the MCI-P. Concurrent validation was determined by comparing responses to the MCI-R, the COPE (Carver, *et al*., 1989) and the Social Problem-Solving Inventory (SPSI - D'Zurilla & Nezu, 1990).

Despite the CFA results providing some limited support for the proposed model, internal consistency of the MCI-R scale was modest, ranging between 0.74 and 0.84. Similarly, a two-week retest yielded coefficients ranging between 0.70 and 0.84, which are modest considering the very short retest period. The samples used in the development of the MCI-R consisted of undergraduate students, thereby raising the question about its relevance to broader population groups. The MCI-R assesses coping by asking individuals to respond based on situation-specific scenarios, which may limit the responses generated to the specific scenarios. The concurrent validation results indicated no coefficients larger that 0.45 with criterion measures, and mostly below 0.30. Cognitive avoidance scales, in particular, showed very few significant correlations with for example the COPE scales, with the highest correlation 0.22 and the rest all below 0.20 (see Krohne, *et al*., 2000).

1.3.9 Coping Styles Questionnaire (CSQ)

Roger, *et al*. (1993) developed the Coping Styles Questionnaire (CSQ) by factor analysing an initial pool of 78 items. Initial results yielded a similar 3-factor structure to that of earlier scales, but after generating additional items using a scenario technique pioneered by Roger and his colleagues (Forbes & Roger, 1999; Roger & Najarian, 1989; Roger, *et al*., 1993), further analyses of an expanded 90-item pool resulted in a fourth factor labelled detached coping (Roger, *et al*., 1993). Detachment is defined as being able to maintain perspective (not 'turning molehills into mountains'), and the four factors in the final CSQ are *Rational coping* (RATCOP – 16 items), *Detached coping* (DETCOP – 15 items), *Emotional coping* (EMCOP – 16 items), and *Avoidance coping* (AVCOP – 13 items).

The patterns of correlations between these factors indicated an adaptive coping dimension comprising rational and detached coping and a maladaptive dimension comprising emotional and avoidant coping. Overall the CSQ has satisfactory reliability coefficients, and concurrent validation using a measure of rumination from the Emotion Control Questionnaire (ECQ – Roger & Najarian, 1989) showed that the two adaptive coping scales were significantly negatively related to the tendency to ruminate over emotionally upsetting events, while the two maladaptive scales were positively related to rumination.

Roger and his colleagues have developed robust emotional response style scales to address the stress response, and from these studies the rumination factor has offered a promising route to explaining personality variables as a moderator in the stress and wellbeing relationship, particularly in conjunction with Detached coping: rumination and detachment are significantly inversely correlated (Roger & Jamieson, 1988; Roger & Najarian, 1989). Subsequent unpublished confirmatory factor analyses suggested that the detached and emotional factors formed a single scale in an overall 3-factor rational, avoidance and detached coping instrument. However, other analyses have confirmed the original four-factor structure, and despite the encouraging findings with the scale, the CSQ requires further research to establish its contribution to the coping literature. The merged detached/emotional scale was used in the present thesis as part of the concurrent validation of the GSAQ, and will be returned to in Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms.

1.3.10 Cross-Cultural Coping Scale (CCCS)

Several authors have argued that coping research has not sufficiently captured cultural differences (e.g., Dunahoo, Hobfoll, Monnier, Hulsizer, & Johnson, 1998; Kuo, Roysircar, & Newby-Clark, 2006; Monnier, Hobfoll, Dunahoo, Hulsizer, & Johnson, 1998). Research findings indicate that there may be differences related to self-directed (individualistic) as opposed to other-directed (collectivistic) coping

preferences (Kuo, *et al*., 2006; Roger, García de la Banda, Soo Lee, & Olason, 2001) – for example, North Americans and Asians may cope in different ways based on the relatively more individualistic versus collectivist natures of these cultures, respectively (see Kuo, *et al*., 2006 for a brief review).

Kuo, *et al*. (2006) developed the Cross-Cultural Coping Scale (CCCS) by generating an item pool from a literature review of general coping, cross-cultural coping as well as ethnic minority coping (Kuo, *et al*., 2006). Appropriate items were also adopted from existing scales, and a total of 30 individualistic and 25 collectivistic items were judged for content validity based on the authors' counselling experience with Asians in the United States and Canada (Kuo, *et al*., 2006).

These were reduced to 29 items, and respondents were asked to rate each statement in relation to two stress-evoking scenarios. Factor analysis resulted in 20 items loading across three factors labelled *Collective coping*, *Avoidance coping*, and *Engagement coping*. Confirmatory factor analysis of responses to a separate interpersonal conflict scenario confirmed the three factor structure (Kuo, *et al*., 2006), and a subsequent cross-cultural study demonstrated significant differences between participants from different cultures (Kuo, *et al*., 2006). However, as mentioned, the scale items were derived by reviewing literature and based on the developers' clinical experience, and they have also adopted items from existing coping scales at the time.

Additionally, part one of the study comprised participants ranging from 12 years old to 19 years old (sample mean age 16.5 years) while the sample in the second part comprised students with a sample mean age of 22 years, which must bring the broader application of the scale to diverse adult samples into question. Parcel-based CFA results indicated a reasonable Root Mean-square Error of Approximation (RMSEA, 0.07) and Goodness of Fit Index (GFI, 0.93), but Comparative Fit Index (CFI, 0.76) was low, and the internal consistency coefficients ranged between 0.52 and 0.78.

1.4 Avoidance Coping Scales

Most of the coping measures reviewed above have an avoidance scale as just one of several coping dimensions, but the focus of this thesis is avoidance coping. The aim of the thesis is to develop a new scale for assessing different dimensions of avoidance, and this section will provide a somewhat more detailed and critical review of existing scales devoted to assessing avoidance coping.

1.4.1 Cognitive-Behavioral Avoidance Scale (CBAS)

In the context of a suggested link between avoidance coping and depression, Ottenbreit & Dobson (2004) developed a multidimensional avoidance scale entitled the Cognitive-Behavioural Avoidance Scale (CBAS). The authors included in the new measure cognitive versus behavioural, active versus passive, and social versus non-social dimensions, and within this conceptual framework they proposed the four different types of avoidance coping: *Active Cognitive Avoidance* (denying or minimising the problem through distraction), *Passive Cognitive Avoidance* (passively accepting a problem or failing to address it), *Active Behavioural Avoidance* (escaping from a problem and/or engaging in alternative activities), and *Passive Behavioural Avoidance* (avoiding a problem or avoiding dealing directly with the problem). These types were further qualified by a *social* problem domain, including social activities or contacts, and a *non-social* problem domain, including achievement-related and solitary activities (Ottenbreit & Dobson, 2004).

The preliminary CBAS items were derived by reviewing and adapting items from existing coping scales as well as writing new items based on theory. This resulted in eight positively keyed items per dimension combination for a total of 64 items, and a sample of 391 undergraduate psychology students completed the preliminary items based on a 5-point Likert-type scale ranging from "*not at all true for me*" to "*extremely true for me*" (Ottenbreit & Dobson, 2004). Repeated factor analysis reduced the items to 31, loading across four factors labelled *Behavioural Social*, (8 items such as "I tend to make up excuses to get out of social activities."), *Cognitive Non-social (*10 items such as "While I know that I have to make some important

decisions about school/work, I just don't get down to it.", *Cognitive Social,* (7 items such as "I just wait out the tension in my relationships hoping that it will go away." (6 items) – *Behavioural Non-social*, (6 items such as "I avoid trying new activities that hold the potential for failure.") (Ottenbreit & Dobson, 2004, Moulds, Kandris, Starr, & Wong, 2007).

Reliability estimates were all satisfactory (Ottenbreit & Dobson, 2004), with coefficient alpha ranging between 0.75 and 0.86 on the four scales. Concurrent validation findings using the avoidance scales of the CRI (Moos, 1988), WCQ (Folkman & Lazarus, 1988) as well as the harm avoidance scale of the Tridimensional Personality Questionnaire (TPQ - Cloninger, Przybeck, & Svrakic, 1991) were consistent with expectations, and the authors argued that in future avoidance scales should include behavioural, cognitive and social/non-social dimensions. However, despite some correlations indicating statistically significant relationships with criterion measures, the majority were below 0.40. In fact, only 10 out of 30 correlations between the CBAS subscales and divergent avoidance (approach) scales were greater than 0.20, and more than half of the 30 correlations were non-significant, which casts serious doubt over the authors' claim that the scales indicated good convergent and divergent validity.

There were consistently higher correlations between the CBAS factors and the harm avoidance scale of the Tridimensional Personality Questionnaire (TPQ) compared to those with the situational avoidance coping scales of the CRI and WCQ, and together with the stability (r = 0.58 to r = 0.94) of the CBAS over a 3-week inter-test interval, the authors suggest that avoidance might be more trait-like than state-like (Ottenbreit & Dobson, 2004). The authors offer that the CBAS is a reliable tool for researchers wanting to investigate multidimensional avoidance coping and depression, however, they do acknowledge limitations and criticisms concerning the development of the CBAS (see Ottenbreit & Dobson, 2004 for a review). One of these is the samples that were used in the development of the CBAS, and items were developed from previous coping scales and based on theory only. Correlations with previously developed coping scales, such as the CRI, were mostly low, with very few statistically significant divergent correlations. Although the

authors mention a previous study which incorporated CFA methodology, there appears to be no formal confirmation of the structure using CFA, and neither is there a replication of the scale structure assessment in other samples. Finally, the subscales comprised relatively few items, with only seven for Cognitive Social and six for Behavioural Non-social.

1.4.2 Cognitive Avoidance Scale (CAQ)

The Questionnaire d'Évitement Cognitif (QEC - Gosselin, Langlois, Freeston, Ladouceur, Dugas, & Pelletier, 2002) comprised a 41-item face-valid pool generated by clinical researchers, and factor analysis resulted in five factors with five items in each scale. These were concerned with *Avoidance of threatening stimuli*, *Distraction*, *Thought suppression*, *Substitution of distressing thoughts*, and *Transformation of images into thoughts*, and in a series of studies the authors reported satisfactory psychometric properties in non-clinical samples (Gosselin, *et al*., 2002).

An English version of the scale was developed using back-translation methodology, translating the scale into English then independently translating that back into French to ensure comparability of the two versions. Analysis of the final English version of the scale, entitled the Cognitive Avoidance Questionnaire (CAQ – Sexton & Dugas, 2008), led to the same 25-item factor structure, and the two questionnaires assess a range of cognitive avoidance strategies that most coping measures present as either a single dimension or a part of a larger avoidance coping domain (Sexton & Dugas, 2008).

The psychometric properties of the English version were satisfactory, with internal consistencies above $\alpha = .70$ and a 4-6 week test-retest reliability above $r = .70$ for all the subscales. Convergent and divergent validity also provided significant correlations with other relevant measures such as the MCI-R and White Bear Suppression Inventory (WBSI – Wegner & Zanakos, 1994), and confirmatory factor analysis (CFA) confirmed the original five-factor structure of the QEC and CAQ according to the authors of the CAQ paper. However, inspection of the CFA

(Sexton & Dugas, 2008) results indicates lower than the expected goodness of fit criteria, with a Comparative Fit Index (CFI) of 0.88, a Bentler-Bonnet Non-normed Fit Index (NNFI) of 0.86 and a The Root Mean-square Error of Approximation (RMSEA) of 0.08 (for a discussion of appropriate fit indices, see Brown, 2006; Rogelberg, 2004).

Furthermore, the items in the original French QEC were developed by clinical researchers in the field of intrusive thoughts and cognitive avoidance, who generated face-valid items based on clinical experience and theoretical considerations. In fact, the authors of the English CAQ development paper themselves acknowledge this as a potential weakness of the CAQ. The CAQ scales also correlate consistently highly with each other, which casts doubt about whether the scale does measure distinctly different cognitive avoidance domains. The authors only report convergent and divergent validity for the total CAQ compared to other scales, whereas it would be useful to assess convergent and divergent validity for each of the five CAQ scales. Finally, each of the scales comprises only five items, which, again casts some doubt as to whether the scales assess the domains sufficiently.

1.4.3 Multidimensional Experiential Avoidance Questionnaire (MEAQ)

Gámez, Chmielewski, Kotov, Ruggero, & Watson (2011) noted that existing measures of experiential avoidance tended to define the construct too narrowly. They also pointed out that the only global measure of experiential avoidance available at that time, the Acceptance and Action Questionnaire (AAQ – Hayes, Strosahl, Wilson, Bissett, Pistorello, Toarmino, Polusny, Dykstra, Batten, Bergan, Stewart, Zvolensky, Eifert, Bond, Forsyth, Karekla, McCurry, 2004), had reported questionable internal consistencies, suggesting that it may include items measuring constructs unrelated to experiential avoidance.

Gámez, *et al*., 2011 defined experiential avoidance as avoiding the experience of negative affect, and they examined experiential avoidance in the six domains of behaviours, emotions, thoughts, memories, autonomic sensations, and pain. Within

each of these domains several items were included to measure non-acceptance of negative experiences, interference with values and/or goals, strategies that have a high probability of serving the function of avoidance but do not require explicit awareness, and attitudes or beliefs regarding negative experiences. Guided by these principles, six individuals who were members of clinical academic faculty, clinical psychology graduates or practising clinicians generated an initial pool of 170 items. They then grouped the items into 14 tentative clusters with themes labelled Procrastination, Distraction, Passive avoidance, Active avoidance, Maladaptive coping, Denial, Thought suppression, Emotional avoidance, Emotional regulation, Emotional detachment, Autonomic avoidance, Pain avoidance, Values or willingness, and Attitudes toward distress.

The item pool was completed on a 6-point Likert scale by a sample of 312 predominantly female undergraduate psychology students, and after dropping one item the remaining 169 items were factor analysed using an oblique rotation to a 79-item solution. The items were then revised and a number of new items added, and the second-stage pool of 124 items completed by another predominantly female sample of undergraduates as well as a sample of 201 health clinic outpatients. Participants were also asked to complete a range of further measures to determine convergent and discriminant validity, including the AAQ (Hayes, *et al.*, 2004), CBAS (Ottenbreit & Dobson, 2004), the PANAS negative affectivity scale (Watson *et al.*, 1988), the Big Five Inventory (John & Srivastava, 1999), the COPE denial scale (Carver, *et al.*, 1989), and the Impact of Event Scale avoidance sub-scale (Horowitz, *et al.*, 1979).

After further revisions the structure of a final 113-item pool was factor analysed to a terminal solution using oblique rotation. Further items were then dropped, and the remaining 62 items factor analysed again to provide a final form of the MEAQ comprising six factors: Behavioural Avoidance (11 items), Distress Avoidance (13 items), Procrastination (7 items), Distraction/Suppression (7 items), Repression/Denial (13 items), and Distress Endurance (11 items). Internal consistencies of the MEAQ subscales across all samples averaged .83 and average inter-item correlations between the scales ranged from .25 to .42. A final factor

analysis from another sample of undergraduates and individuals recruited from outpatient clinics yielded a similar factor structure with equally high consistency statistics (Gámez, *et al*., 2011).

Despite the research effort devoted to the scale, a number of shortcomings remain. The items were generated based on theory and by individuals who do not represent the general public; this is an issue which will be returned to in the development of the coping questionnaire in this thesis. The MEAQ was arrived at by repeated and selective exploratory factor analyses until a preferred final solution was arrived at, rather than employing confirmatory factor analysis after an initial exploratory process. Other than parallel analysis (using a 95% confidence interval), which can sometimes yield arbitrary outcomes (see Brown, 2006), the criterion for selecting the number of factors is not mentioned, but in the absence of any reference to a scree test it was most likely based on an eigenvalue-1 criterion, which has been widely criticised for resulting in the extraction of too many factors (Brace, Kemp & Snelgar, 2006; Brown, 2006; Cattell, & Vogelmann, 1977; Costello & Osborne, 2005; DeVellis, 2003; Hinkin, 1995). Finally, there is no mention of retest statistics (which is in fact mentioned as a limitation by the authors themselves), and the samples are strongly gender-biased and drawn primarily from undergraduate psychology student populations.

1.5 Avoidance Coping – Psychological and Physical Health

Earlier in this chapter it was noted that avoidance coping is implicated in the stress-health relationship. In this thesis an analysis of avoidance coping and psychophysiological health has been included, and this section briefly describes a representative selection of studies linking avoidance coping to psychological and physical health outcomes.

Kashdan, Barrios, Forsyth, and Steger (2006) have highlighted various studies pointing to correlations between experiential avoidance and both psychological and physical measures, and avoidance appears in many ways as a central feature of Axis I anxiety disorders in the DSM IV (American Psychiatric Association, 1994, in

Moulds, *et al*., 2007). Avoidance, and particularly cognitive avoidance, is one of the factors distinguishing between patients diagnosed with Generalised Anxiety Disorder (GAD) and non-clinical worriers (Ladouceur, Dugas, Freeston, Rhéaume, Blais, Boisvert, Gagnon, & Thibodeau, 1999). Avoidance is also a prominent factor in Acute Stress Disorder (ASD, Rassin, Merckelbach, & Muris, 2000) and Post Traumatic Stress Disorder (PTSD, Davies & Clark, 1998; van Minnen & Hagenaars, 2010; Rassin, *et al*., 2000), involving strategies ranging from the avoidance of reminders of traumatic events, the use of cognitive or thought suppression or engaging in behaviours such as abusing drugs or alcohol in order to avoid emotional responses to the trauma they experienced (Davies, & Clark, 1998; Moulds, *et al*., 2007).

Results of a study by Sexton and Dugas (2009) examining the relationships among negative beliefs about worry, the fear of anxiety and cognitive avoidance suggest that the fear of anxiety and negative beliefs about worry predict the use of cognitive avoidance to cope with threatening thoughts, images, or stimuli. Sexton and Dugas (2009) also state that fear of the somatic symptoms of anxiety and negative beliefs about worry predict cognitive avoidance.

The undesirable qualities of avoidance behaviour in turn generate negative self-evaluations, compromising personal growth (Rector & Roger, 1996), and in a study of the stress moderating effect of optimism, pessimism and "fighting spirit", avoidance coping emerged as a predictor of the severity of somatic symptoms (Olason, 2000). Oxlad, Miller-Lewis, & Wade (2004) indicated that people who make use of avoidance-oriented coping might be at a greater risk for poor medical outcomes, reporting lower levels of optimism, self-esteem, and mental health, as well as higher levels of depression and anxiety than those who used less avoidance coping (Friedman, Nelson, Baer, Lane, Smith, & Dworkin, 1992; Oxlad, *et al*., 2004). Vaillant (1977, in Suls & Fletcher, 1985) reported the results of a 35-year study indicating that coping recognising rather than avoiding stressful life events was related to better adjustment and more positive physical and mental health outcomes.

On the other hand, Lazarus (1983, in Suls & Fletcher, 1985) suggested that avoidant strategies may have beneficial outcomes, effectively providing a respite in the short term until the individual has the mental, physical and emotional resources available to deal with the crises at hand. In the longer term, however, Suls and Fletcher (1985) point out that avoidant strategies consume considerable effort that could lead to debilitated psychological and physical resources (see also Davies & Clark, 1998; Weinstein, *et al*., 2009). Avoidance might also serve as an element in the maintenance of anxiety (Auguston & Dougher, 1997).

The role of avoidance is further complicated by gender differences, which have delivered mixed results. Blalock and Joiner (2000) extracted two factors from the Coping Resources Inventory (CRI), cognitive avoidance and behavioural avoidance, and found that cognitive avoidance coping predicts depression and anxiety in women but not in men, while behavioural avoidance coping explain neither depression nor anxiety in men or women. Ottenbreit & Dobson (2004) found a similar link between avoidance coping, depression and anxiety, but failed to identify the same gender differences reported by Blalock and Joiner (2000).

Based on the brief review above and the definition of avoidance coping given in the Introduction to this thesis it is proposed that avoidance coping moderates the relationship between stressors and strain, or the stress response, which could lead to the correlates found between psychological distress and psychophysiological health. For example, attempts to continuously avoid thinking about health symptoms and concerns about them, could lead to more severe health consequences if these are not reported to a health professional. It is also proposed that within the stressor (event) and stress response relationship, individuals' perception of the problem and their associated available coping resources may lead to avoidance coping if they feel that they do not have the resources to cope with the situation.

The latter point could further lead to missed opportunities if, for example, the perceived threatening situation was, in fact, an opportunity to develop skills, a career, knowledge, etc. In other words, continuing to avoid a situation, person, emotion, thought or other entity could lead to depleted physical or emotional

resources. It could equally lead to missed opportunities to become more resilient or to place oneself in a more favourable situation. As stated by other researchers (for example, Ottenbreit & Dobson, 2004), avoidance coping reduces an individual's repertoire of coping strategies and they may tend to become more passive rather than active, and in the case of for example depression, withdraw.

1.6 The Neuropsychophysiological Link

From a medical perspective, a significant link was found between avoidance coping styles and the mortality risk of clinically stable patients with symptomatic congestive heart failure (CHF) during a six-year follow-up study (Murberg, Furze & Bru, 2004). These authors argue for counselling advice in active coping skills of patients with CHF to increase their longevity. Other research has focused on the allostatic response, a biological feed-forward process (in contrast to homeostasis, which is a feedback process) involved in arousing physiology to efficiently meet demands and needs (Diamond, 2010a), and the relationship between allostatic load, stress, coping, chronic disease, and both psychological and physical health has received increasing research attention (for example, Diamond, 2010a, 2010b). Suppressing thoughts may also have distinctive effects on the immune system, including a decrease in CD3 T-lymphocytes (Petrie, Booth and Pennebaker, 1998).

The mechanism which might link psychological processes and deleterious outcomes has been the subject of much research, often focusing on the role of so-called stress hormones like adrenalin (and noradrenalin) and cortisol, via the two main pathways of the Sympathetic Nervous System (SNS) and the Hypothalamic Pituitary Adrenal (HPA) axis, respectively (Franken, 1988; Lovejoy, 2006; Roger & Najaran, 1998, Adameova, Abdellatif, & Dhalla, 2009). An increase in demand, such as perceived stress, initiates a two-phase cascade that begins with SNS activation of the adrenal medulla to secrete the catecholamines adrenalin and noradrenalin. The SNS consists of an adrenal medullary branch and a nervous branch, and adrenaline is the primary catecholamine released from the chromaffin cells of the adrenal medulla (Lovejoy, 2006). Noradrenalin is released from the nerve terminals of the neural branch (sympathetic ganglia) involved primarily in cardiovascular activation, and

evidence suggests that the adrenal medullary branch is more related to emotional stress while the neural branch is more involved in physical workload (Lovejoy, 2006).

During phase two glucocorticoid (cortisol) release is initiated by the medial hypothalamus secreting corticotropin releasing hormone (CRH), which stimulates the pituitary gland to secrete adrenocorticotropic hormone (ACTH) (Foley & Kirschbaum, 2010; Kingsley, 1996; Lovejoy, 2006). ACTH stimulates the adrenal cortex to secrete cortisol, which in turn activates sugar metabolism to facilitate the so called 'fight or flight' response to demand (Lovejoy, 2006). Any increase in demand will elicit concomitant elevations in adrenaline and cortisol, leading to increases in heart rate, blood pressure and metabolism as the organism responds (Dickerson & Zoccola, 2009), and this integrated SNS and HPA axis response provides short-term modulation of a wide range of appropriate somatic functions. However, chronic or repeated elevations in these hormones can lead to the suppression of components of the immune system, damage to the hippocampal neurons and increased depressive symptomatology, as well as raising cardiovascular risk factors such as blood pressure (Dickerson & Zoccola, 2009).

The sensitivity of the pituitary-adrenal cortical system to psychological factors makes it a useful marker for the stress response (Baum, Grunberg, & Singer, 1982), and early research on 17-hydroxycorticosteroids (17-OHCS, primarily cortisol) has indicated that different coping styles appear to alter 17-OHCS responses to similar stressors (e.g. Wolff, Friedman, Hofer, & Mason, 1964). There was also early evidence from animal studies suggesting that the activation of the SNS facilitates the learning of avoidance responses (Di Giusto, Cairncross, & King, 1971), and Silver, Auerbach, Vishniavsky, and Kaplowitz (1986) indicated that human patients with the highest recurrence of genital herpes included those who tend to use emotion-focussed, avoidant and wishful thinking as a way of dealing with their condition. Sapolsky (2004) alludes to an interesting example of how latent Herpes Virus (which can cause for example cold sores) DNA (deoxyribonucleic acid) in our neurons contains a stretch of DNA that is sensitive to elevated glucocorticoid signals. When glucocorticoid levels are high enough, the glucocorticoid-detecting

sensor in the Herpes Virus DNA activates genes that cause the Herpes Virus to emerge from latency. The Herpes Virus also has the ability to cause the hypothalamus to release more CRH, which in turn signals the release of more ACTH from the pituitary gland, and in turn raises glucocorticoid levels after adrenocortical activation (Sapolsky, 2004).

More recent research has included studies of the effects of coping strategies on telomeres, which are DNA-protein complexes at the end of chromosomes and serve to promote the stability of chromosomes (Epel, Blackburn, Lin, Dhabar, Adler, Morrow & Cawton, 2004; Puterman, Lin, Blackburn, O'Donovan, Adler, Epel, 2010). Telomeres shorten with age in humans because they are not replicated fully during every cell (and DNA) replication, and telomere length can thus serve as a "biomarker" for biological age versus chronological age (Epel, *et al.*, 2004). Investigating the biological and genetic effects of the perception and chronicity of psychological stress in a sample of premenopausal women, Epel *et al.* (2004) found that psychological stress is significantly associated with lower telomerase activity and shorter telomere length. Women with the highest levels of perceived stress had the shortest telomere length. In fact, telomere length in the sample of "high stress women" was on average shorter by the equivalent of an additional decade of aging.

A detailed overview of the psychobiology of stress is beyond the scope of this thesis, but detailed reviews of the research have been published by Arnsten (2009; 2011) and Feder, Nestler & Charney (2009). The results of the research strongly indicate a link between coping, and especially avoidance coping, and both psychological and physical health, and measures of psychological health as well as physical symptoms associated with stress are included in the validation of the new avoidance measure developed in this thesis.

1.7 Avoidance Coping in Occupational Settings

Workplace stress has gained increasing importance, and a number of governments have created formal legislation to mitigate its effects. In New Zealand, for example, workplace stress is included in the Health and Safety Employment Act as

a workplace hazard (Haar, 2006). Workplace stress costs the UK industry an estimated £9.6 billion per year (Donaldson-Fielder, Yarker, & Lewis, 2006), and in New Zealand, the Sunday Star Times reported in 2001 that some employers were sued by employees for up to NZ$750,000 for mental trauma (Haar, 2006). Apart from stress being regarded as an explicit workplace hazard, coping with stress and stressors has a significant effect on a variety of occupational problems, ranging from work engagement and job performance to 'burnout'. This thesis does not include a specific assessment of the role of avoidance in occupational settings, and a detailed review of the findings is beyond the scope of the project. The brief review below is intended more to broaden the frame of reference for considering the potential effects of adopting avoidant coping strategies.

In general, the literature seems to adopt the model that regards stressors as physical and psychological stimuli, whereas stress is the reaction to stressors. According to Lee and Lee (2001) many occupational studies have focussed on the stressor-stress relationship and on consequences such as job satisfaction and burnout, but few have recognised the mitigating effects of coping on job stress. Lee and Lee (2001) assessed the link between stressors, coping and job performance by dividing coping strategies into direct action, internalising, externalising and avoidance, derived from the cognitive appraisal processes model. They defined avoidance as selective inattention to unpleasant features and heightened attention to pleasant features, and they found positive relationships between job stressors, stress and avoidance strategies but a negative relationship between avoidance strategies and job performance, indicating that avoidance strategies in the presence of job stressors may increase job-related stress and reduce job performance.

One occupation that is conventionally regarded as highly pressured is nursing, and within this occupational group escape-avoidance strategies were shown to compromise mental well-being (Chang, Daly, Hancock, Bidewell, Johnson, Lambert, & Lambert, 2006). The authors concluded from their literature review and research findings that avoidance strategies are generally detrimental to nurses' health, and speculated that even though avoidance strategies may offer temporary relief from a stressor, they do not deal with the cause or source of the stress and

therefore fail as effective long-term coping strategies. Similarly, van der Colff and Rothmann (2009) reported that avoidance coping is one of the predictors of burnout and low work engagement in a sample of 818 registered nurses.

Suicidal ideation is an important precursor to attempted suicides. In comparison with police suicide rates elsewhere in the world the suicide rate in the high-pressure environment that characterises police work in South Africa is very high, and Pienaar, Rothmann and van de Vijver (2007) assessed the relationship of avoidance coping and suicidal ideation in the South African Police Service (SAPS). The sample was a demographically diverse, stratified random sample of 1794 police officers, and the results showed that sources of stress within the policing environment, coupled with cognitive and behavioural avoidance of negative work events, predisposed police officers to suicide ideation. The authors suggested that including an assessment of coping (specifically low scores on avoidance coping) during employee selection and assessment may potentially reduce suicide ideation. They also suggested including training in effective coping strategies.

From this brief summary of avoidance coping within the occupational environment, it is clear that avoidance is not only maladaptive and ineffective in clinical and counselling samples. Avoidance coping has far-reaching effects on individuals, but also impacts significantly on organisations and the economy as a whole, judging by the significant amount of money spent on work-related stress. Organisationally, avoidance coping impacts on job performance and work engagement, but also impacts on downtime owing to burnout and stress-related illness. The financial impact further provides grounds for including coping measures, especially measures of avoidance coping, in order to help identify training needs during the selection and assessment of new recruits, as well as during contingency planning and leadership or management development initiatives and as part of general training initiatives. Being able to assess avoidance coping reliably could also help prevent the effects of work-related stress impacting on individuals' personal lives and on their families.

1.8 Conclusions

The review of general coping measures showed that while they have been widely used in research, the measurement of coping continues to be dogged by significant psychometric shortcomings. These include generating items from theoretical principles or relying on 'expert' opinion such as clinicians' experience with patients. In many cases items were derived from existing coping measures which have been shown to be psychometrically inadequate, with confounded or unclear items or factor structures based on exploratory factor analysis (EFA) without confirmatory factor analysis (CFA) (Brace, *et al*., 2006; Steed, 1998; Williams, Ford, Nguyen, 2005). Some of these shortcomings have already been discussed, but examples include the WCQ (Folkman & Lazarus, 1985) situation-specific coping measures, and measures like the CISS (Endler & Parker, 1990) and COPE (Carver, *et al*., 1989).

There is also debate about whether coping should be considered a trait or a state, and despite Folkman & Lazarus' (1985) criticism of the trait or dispositional approach traditionally used in coping measures, the instructions to respondents is often based on a trait or dispositional approach instead of the process approach recommended by Steed (1998). Measures like the WCQ (Folkman & Lazarus, 1985) are situation-specific coping measures, and measures like the CISS (Endler & Parker, 1990) and COPE (Carver, *et al*., 1989) could be used as a coping trait or process measures by merely changing the administration instructions (Steed, 1998). The process approach has items based on a specific stressor, as well as defining the period during which it was experienced, such as the past 6 months (Steed, 1998), whereas trait measures of coping asks how people would cope with stressors in general.

Based on validation studies of several coping measures, there is clearly a need to challenge and improve on existing coping models and measures, especially in the avoidance domain. Only more recently has there been an increased focus on assessing the multidimensionality of avoidance coping, with measures such as the QEC/CAQ (QEC - Gosselin, *et al*., 2002; and CAQ - Sexton & Dugas, 2008), the

CBAS (Ottenbreit & Dobson, 2004) and the MEAQ (Gámez, *et al*., 2011). This research has been pursued primarily to assess multi-dimensional avoidance coping in relation to clinical symptoms such as depression, anxiety and PTSD, and in some cases the measures have been specifically developed to measure avoidance coping in clinical contexts (see for example, Gosselin, *et al*., 2002; Ottenbreit & Dobson, 2004; Sexton & Dugas, 2008).

Many of the same shortcomings displayed in general coping measures also characterise measures of more narrowly-defined avoidance coping. The CBAS and QEC/CAQ were developed based on previous coping scales, theory, and clinical researchers compiling face-valid items relating primarily to clinical patients with depression and patients with anxiety disorders. DeVellis (2003) has voiced concerns about using face validity as an indicator of the validity of a measurement instrument, such as the variable being measured not necessarily being obvious. Face validity also does not indicate to whom it appears to be face valid – equally qualified and experienced individuals may have different opinions about the face validity of an instrument and tend to base their opinions of an instrument's face validity on personal opinions (DeVellis, 2003). The CBAS and QEC/CAQ were also ostensibly developed for possible clinical applications, but were developed using non-clinical samples consisting of mostly undergraduate students. These criticisms apply equally to the MEAQ, and more specifically using items developed by clinicians rather than objective coping responses derived from the public. The MEAQ development also heavily relied on a number of subsequent sets of exploratory factor analysis and failed to report more robust confirmatory factor analysis results or retest results.

This project aims to develop an avoidance coping scale by asking people to list their personal and actual responses to hypothetical scenarios and a series of actual events they had to deal within a life domains questionnaire. Respondents were requested to respond to a set of hypothetical scenarios, and to briefly describe a specific personal scenario relating to life domains, and what they had done to cope with the situation. In this way, responses about the real world were generated by ordinary people, as opposed to 'experts' generating items or using items from existing scales

that may not be applicable. In many of the measures discussed, concurrent validation was determined by means of self-report measures. It appears that despite the clinical implications of avoidance coping suggested by the authors of various coping measures, no attempts have been made to determine the avoidance and physiological stress response relationship from a multidimensional perspective, which is another unique inclusion in this thesis.

Overall, the review of existing avoidance scales and the relationship between avoidance and both psychological and physical well-being underscores the importance of returning to the construct of avoidance and to generate a new scale based on appropriate psychometric methods. The scenario technique developed for this thesis project has been compiled based on methodology developed and successfully implemented by Roger and colleagues (see for example Forbes & Roger, 1999), with scenarios developed through an extensive clinical literature review as well as wide-ranging discussions with the general public to elicit scenarios which they may find stressful. The scenarios and the process of using them to elicit items will be discussed in Chapter 2: General and Specific Avoidance Questionnaire Development, together with an account of the additional life domains questionnaire developed by the author where respondents recalled a stressful situation they had experienced and described how they have dealt with it. This life domains portion is an addition to the original scenario-based technique, and allows for a more qualitative and less prescriptive way of generating coping responses in relation to life situations individuals had faced and dealt with.

1.9 A Brief Overview of the Following Chapters

Chapter 2 describes the development of the General and Specific Avoidance Questionnaire (GSAQ) in more detail. It explains the methodology used to generate scale items and also refining the initial scale structure, rendering a three-factor structure consisting of General Avoidance, Emotional Avoidance and Conflict Avoidance.

Chapter 3 describes the confirmatory factor analysis (CFA) of the GSAQ in independent samples to confirm the original three-factor structure in two English-speaking samples. The CFA indicates a best fit for the three-factor model of avoidance coping in both samples.

In Chapter 4 the concurrent validation of the GSAQ and subscales is described, using well-validated and reliable measures which has previously been shown to correlate with avoidance coping. The measures include proactive coping, detached coping, rumination, depression, anxiety, stress and physical symptoms associated with psychological distress. A supplementary analysis briefly describes differences between high and low avoiders on the GSAQ scales.

Chapter 5 discusses the translation of the GSAQ into Spanish and subsequent cross-cultural factorial validation of the GSAQ, as well as discussing potential cultural similarities and differences.

Avoidance coping has been reported to be an important factor in deliberate self-harming behaviour, and Chapter 6 explores this relationship from a multidimensional avoidance coping perspective. No existing studies were found where the relationship between multidimensional avoidance coping and deliberate self-harm were assessed.

Chapter 7 explores the role of avoidance coping in cardiovascular activity during a mild laboratory-induced conflict stressor. Differences in cardiovascular reactivity (change from the baseline) are explored in terms of high and low avoiders on the GSAQ subscales.

Chapter 8 summarises the thesis and highlights the main findings from the preceding chapters.

Chapter 2: General and Specific Avoidance Questionnaire Development[2]

2.1 Introduction

The literature reviewed in Chapter 1 revealed a great deal of confusion over the definition of avoidance in general. The chapter also summarised the shortcomings of current multidimensional scales used to measure avoidance coping in particular, including issues over item generation and wording and the reliability and validity of existing scales. In an attempt to address these issues, this chapter describes the construction of a new avoidance scale, the General and Specific Avoidance Questionnaire (GSAQ). The shortcomings of avoidance scales in general highlighted in the review provide a clear justification for developing a new scale and the aim is to provide a psychometrically adequate, multidimensional index of avoidance coping. The following sections describe the scale development process, starting with the qualitatively-oriented scenarios and life domains study which was used to generate the initial item pool, and then proceeding to the factorial validation of the new scale using exploratory factor analysis (EFA).

2.2 Scenarios and Life Domains Study[3]

One of the important criticisms of existing coping scales is that they have been developed from item pools derived from theory, from face-valid items and from existing coping scales and/or generated by "experts' (clinicians, theorists, practitioners or postgraduate psychology students). The scenario technique pioneered and developed by Roger and his co-workers (for example, Forbes & Roger, 1999; Olason, 2000; Roger & Nesshoever, 1987; Roger & Najarian, 1989) has been used with success during various scale development research projects. Rather than simply drawing from existing scales or relying on face-valid judgements by expert panels, the procedure derives primary item pools from

[2] The main findings of chapters 1, 2, 3, 4, and 5 were accepted and presented as a paper at the 33rd International Conference of the Stress and Anxiety Research Society (STAR), Palma de Mallorca, Spain (2 – 4 to July 2012).

[3] Appendix 2 presents the Scenario and Life Domains Questionnaire for a detailed review.

unbiased responses to sets of scenarios. For each scenario, respondents are asked to say how they would feel, what would be their likely thoughts, and what they would do.

A detailed review focussing on coping, stress and the organisational and clinical literature was augmented by personal interviews asking people to describe situations during which they felt pressured, challenged or under threat. During the scenario development a number of elements were considered, for example: the situational context, event dynamics, time frame, whether it could be considered to be controllable or not, the level and strength of relationships between the people involved in the scenario and the respondents, physical and non-physical threats, etc. The scenarios described during these reviews and interviews were written and reviewed by the researcher, research supervisor, co-supervisor and an independent consultant to ensure that the scenarios span a variety of situations and that there are no scenarios that are too similar. The scenarios went through an iterative process of refinement and discussion until after a fourth review by the researcher, research supervisor, co-supervisor and independent consultant until agreement was reached. At every stage of the scenario development the current definitions of avoidance coping were referred to, including the definition described in this thesis in order to incorporate as many as possible potential scenarios which could lead to avoidance coping and elicit avoidance responses for the GSAQ item development phase.

Further refinement led to a questionnaire comprising a set of 35 scenarios ranging from personal to work-related situations, including social and non-social situations and varying in the degree of relationship involved, such as immediate family, distant family, colleagues, friends, and strangers. To enhance the qualitative value of the scenario study the researcher added a second part to the scenario questionnaire by including a list of nine life domains: Work, Immediate Family, Extended Family, Friends, Financial, Community, Physical Health, Mental Health, and Spiritual Health. In the life domains section, respondents were asked: "Please have a look at the life domains listed below and briefly describe a significant event that occurred for you within any of them that *you* can recall, and tell us how *you* felt, what *you* thought and what *you* did during and after the event you described."

This led to an initial set of scenarios which were then reviewed, finalised and presented to voluntary participants through the researcher's personal network, who were told: "We are interested in what *your* likely response will be when faced with the scenarios listed below. There are no right or wrong answers. Please provide brief responses to as many of the scenarios listed below as you feel able to, in terms of how *you* would feel, what *you* would think and what *you* are likely to do when faced with the scenarios below."

The Scenario and Life Domain Questionnaire (SLDQ) was a lengthy but extremely valuable qualitative source of coping responses. The complete questionnaire was submitted to the University of Canterbury Human Ethics Committee (HEC) for review based on the potentially sensitive nature of some of the scenarios. After receiving approval from the HEC, the final version of the Scenario and Life Domain Questionnaire and a detailed debriefing sheet was made available to voluntary participants to complete anonymously online through the researcher's personal network.

The sample of 30 voluntary participants comprised a diverse range of individuals from Australia (n = 2), England (n = 2), South Africa (n = 18), New Zealand (n = 4) and the rest (n = 4) from Germany, Ireland or undisclosed. The sample also represented a wide range of self-selected occupational sectors including: Education, Research, Marketing, Administration, Consulting, Sales, Business Analysis, Pharmacy, Volunteer Work, Counselling, House Wife, Finance, Biotechnology, IT, Self Employed. One participant did not disclose gender or age, but for the remaining 29 who did do so there were 12 males (M_{age} = 41.83 years; SD_{age} = 7.23; range 33 – 54 years) and 17 females (M_{age} = 40.06 years; SD_{age} = 11.29; range 23 – 68).

To give an idea of the scope and extent of potential coping responses elicited by the SLDQ, a summary of the number of responses per item group is provided in Table 1.

Table 1: Summary of the number of responses elicited from the SLDQ

Responses to the 35 Scenarios		Responses to Life Domains*	
How would you feel	799	How did you feel	94
Describe your likely thoughts	787	Describe your thoughts	94
What would you do	765	What did you do to deal with it	91
Total	2351	Total	279

*Participants described 96 individual events/experiences in total in the life domains section

Preliminary items for the new avoidance coping scale were selected from this large total pool of 2630 responses, guided by the avoidance coping literature and following established scale development methodology (for example, DeVellis, 2003; Hinkin, 1995; Rogelberg, 2004). Care was taken to eliminate items with unclear or double meanings. Definitions of avoidance were taken into account to ensure that the full spectrum of avoidance behaviour was sampled, including strategies such as ignoring, distracting, suppressing, delaying, downplaying, pretending or wishing things away, as well as covering a range of social situations and circumstances which might be perceived as pressured or stressful. The initial item pool contained 80 potential avoidance items derived from the scenario part of the SLDQ and 13 potential avoidance items derived from the life domains part of the SLDQ. These were combined into one new item pool and further narrowed down to 61 items.

A further 10 items were included from the existing avoidance scale of the Coping Responses Questionnaire (CSQ - Roger, *et al*., 1993), which had been developed using a similar scenario approach. The item pool was then reviewed to resolve ambiguities and duplications, and after three independent reviews the final 67-item draft avoidance scale was presented to samples of voluntary participants in a dichotomised 'true-false' response format to limit the tendency for responses to regress towards mid-points and to elicit most-likely responses. The draft scale was headed by the following instruction:

"There are instances when people are faced with events or situations in various parts of their lives when they feel stressed, pressured or challenged. People think, feel and act differently when faced with situations in which they feel stressed, pressured or challenged. How are you most likely to respond to situations during which you feel stressed, pressured or challenged? Please mark 'TRUE' or 'FALSE' for each of the statements below as it applies to *you*. There are no right or wrong answers. We are interested in how *you* are most likely to respond."

2.3 Avoidance Coping Scale Refinement

2.3.1 The Sample

The 67 items (see Appendix 4: Original 67-item Avoidance Scale (CA4) made available to participants) were completed by a voluntary sample of 264 participants from a broad range of working adults and both part-time and full-time students (undergraduate and postgraduate). The overall sample comprised two pooled subsamples, mostly working adults and part-time students recruited through the researcher's personal and professional networks. Most of the full-time students were recruited from The University of Westminster in England, who gained extra course credit for a research module they were completing as part of their course. Participants from the first subsample did not receive any payment or other form of inducement.

Both subsamples included a diverse range of ethnicities, but all mostly from English speaking nations, including New Zealand, Australia, South Africa, the United Kingdom, and the United States of America. The two samples were pooled for the main analyses, but where appropriate separate analyses will be presented in which the first and second subsamples will be designated Subsample 1 (working adults and part-time students) and Subsample 2 (full-time students). Table 2 shows the separate and combined sample descriptions, and as expected Subsample 1 shows a significantly wider mean age and age range than Subsample 2.

Table 2: Exploratory Factor Analysis sample description (Subsample 1 and Subsample 2)

	Subsample 1		Subsample 2		Combined Sample	
Gender	Males	Females	Males	Females	Males	Females
Sample Size	57	94	16	97	73	191
Mean Age*	38.55	37.87	23.56	20.97	35.22	29.38
Median Age*	36	36	20	19	34	27
Mode Age*	24	30	19	18	19	18
Age Range*	19 - 70	21 - 65	18 - 40	18 - 50	18 - 70	18 - 65
SD (Age)*	11.83	9.62	6.93	5.19	12.57	11.45

*One male from Subsample 1 did not provide an age.

*Two females from Subsample 2 did not provide an age.

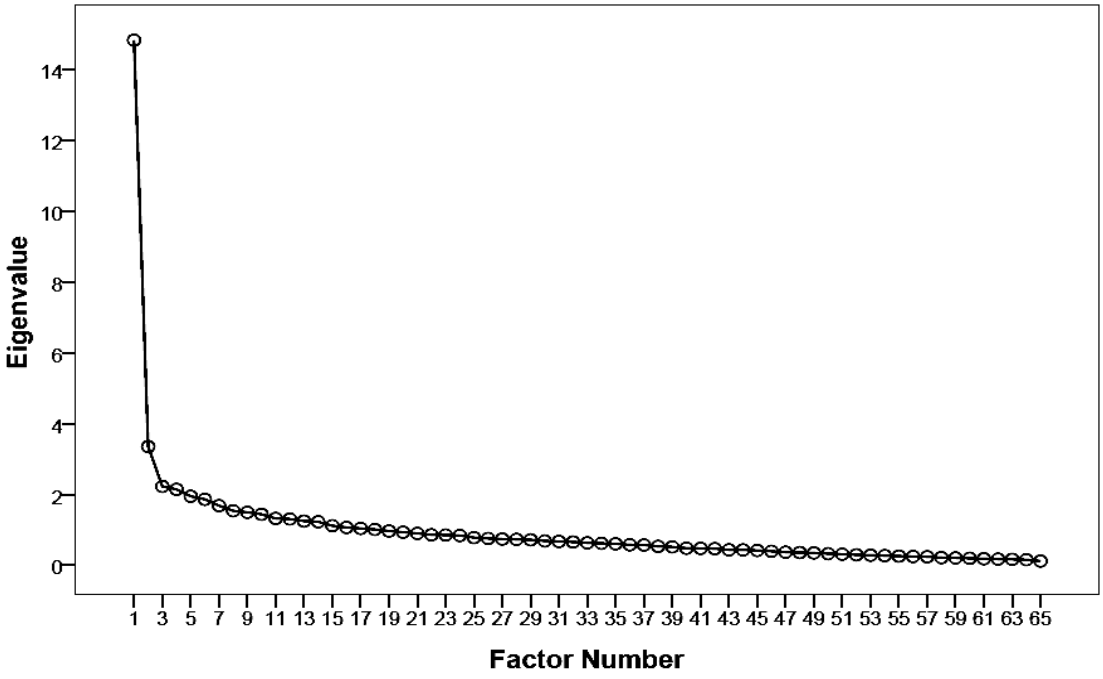
2.3.2 The Procedure: Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) using Principal Axis Factoring (PAF) from the Statistical Package for the Social Sciences (SPSS 17 and 19) was used to analyse the data obtained from the 264 participants (Brace, *et al*., 2006; Brown, 2006; Costello & Osborne, 2005; DeVellis, 2003). An initial test for structure using an unrotated unifactor solution showed that twenty percent (13 items) of the items failed to load, indicating the appropriateness of further analyses. Following an initial principal-axis factor analysis (see below) the item pool was modified slightly to take account of two pairs of items that were similar in content and also loaded to the same degree. The first pair was item 7, "*I make up excuses to myself why I should not have to deal with the situation*" (.614), and item 37, "*I think of excuses why I shouldn't deal with the situation*" (.669), and it was decided to drop the item with the lowest loading (item 7). The second pair was items 30, "*I try not to think about previous bad experiences*" (.768), and 39, "*I try not to think of bad past experiences*" (.748), and again it was decided to the item with the lower loading

(item 39) before continuing the exploratory factor analysis of the remaining 65 items.

The Kaiser-Meyer-Olkin (KMO: 0.868) measure of sampling adequacy and Bartlett's Test of Sphericity ($p < 0.001$) indicated that the data were factorable (Brace, *et al*., 2006). The Scree test (Brace, *et al*., 2006; Brown, 2006; Cattell, & Vogelmann, 1977; Costello & Osborne, 2005; DeVellis, 2003) suggested a three-factor solution (see Figure 1), and rotation to an orthogonal (Varimax) terminal solution using an inclusion criterion loading of .35 indicated a 48-item scale.

Figure 1: Scree test for the combined sample



Factor 1 included 27 items. The three items with the highest loadings on Factor 1 were item 57, "*I think to myself that I have to deal with the situation, but don't do anything about it*," (.685) and item 5, "*I try to avoid having to deal with the*

situation," (.667) and item 61, "*I usually just ignore things and hope that time will somehow sort them out*" (.627). Other items on Factor 1 included items 33, "*If I pretend that the problem doesn't exist it will go away by itself*" (.471), and 45, "*I prefer dealing with a problem rather than making up excuses why I shouldn't have to deal with it*" (-.536), and based on the item content, Factor 1 was named "General Avoidance."

The highest loadings in the 11 items included in Factor 2 were on items 30, "*I try not to think about previous bad experiences*" (.714), 51, "*I try to forget about unpleasant things I have experienced*" (.696), and 27, "*I try to ignore memories of difficult situations*" (.663). Other items on Factor 2 included items 35, "*I try to forget that it ever happened*" (.410), and 23, "*I try not to think about how bad it makes me feel*" (.458), and the factor was labelled "Emotional Avoidance."

The third factor included 10 items, with the three highest loadings on items 14, "*I deal with tension between me and other people because it won't go away by itself*" (.512), item 31, "*I deal with conflict between me and other people rather than ignoring it*" (.501), and item 53, "*Unpleasant circumstances have to be dealt with; they don't just go away*" (.482). Other items loading on Factor three included items 48, "*I discuss difficult situations with the people involved*" (.478) and 41, "*I pretend that there is no tension between me and others even when there is tension*" (-.363), and the factor was labelled "Conflict Avoidance."

Some items double-loaded across factors, and these were resolved by examining loading magnitude and content. For example, item 50, "*Rather than dealing with conflict, I hope it will go away*," loaded on Factor 1 (.520) and Factor 3 (-.464). Although the loading favoured Factor 1 the difference was very small, and in view of the similarity to the theme of Factor 3 it was included on this factor. Item 36, "*In difficult situations, I pretend it didn't happen*," loaded on Factor 1 (.436) and Factor 2 (.357), and similarly item 47, "*I try to distract myself by thinking about other things*," loaded on Factor 1 (.516) and Factor 2 (.432). In both cases the loading difference was smaller than 0.1, and referring to item content the items were included on Factor 2.

Other double-loadings that occurred could be resolved straightforwardly, and the initial 48-item scale was dubbed the General and Specific Avoidance Questionnaire (GSAQ). A complete list of the factor loadings significant factor loadings can be seen in Appendix 5: Principal Axis Factoring solution for three factors (Subsamples 1 & 2).

2.3.3 Oblique Rotation, One Factor, Two Factors and Four Factors.

In order to test the adequacy of the exploratory factor analysis a variety of different factor extraction and rotation combinations were conducted on the data-base, starting with a three-factor oblique (direct oblimin) rotation. No significant differences emerged between the orthogonal and oblique solutions. A two-factor orthogonal (varimax) solution yielded two factors similar to the first two factors in the 3-factor solution, with most of the Factor 3 items loading on the first factor. To test the independence of the first and third factors from the 3-factor solution, a further exploratory analysis rotated the items from only the first and third factors from the 3-factor solution to a 2-factor varimax solution. Eight items loaded on Factor 3, as was the case in the original three-factor solution, including item 50 which double loaded. The only item loading on Factor 3 in the three-factor solution, but not in the current solution, was item number 59. The results indicate that factor 1 and 3 do indeed account for two distinct measures of avoidance.

2.3.4 Further Subsample Analyses for a Final General and Specific Avoidance Questionnaire.

The exploratory factor analysis was based on a pooling of the two subsamples described earlier, which provided the opportunity to explore differences between the subsamples. Comparing the subsamples suggests that the first subsample, comprising working adults and part-time students, is more representative of the general population than the second one comprising full-time students. The first subsample also has a more acceptable sample size for the number of items in the scale (Brace, *et al*., 2006; DeVellis, 2003). Exploratory analyses were run on the

two subsamples separately to make comparisons with the results from the combined sample, though analysis of the smaller second subsample needs to be treated with caution in view of the limited sample size.

To allow ease of comparison between the different solutions, all items were re-coded using SPSS syntax (Brace, *et al*., 2006) to provide a standard item naming format. For example, item 10 on the 48-item scale loaded on Factor 1, and the item name was recorded as GSAQ10_F1, and so on.

The results of the factor analyses on the three samples (combined, subsample 1 and subsample 2) are summarised in Appendix 6: Principal Axis Factoring solution for three factors on the 48-item (Combined and Separate Subsample 1 and 2). Comparing the results using a variety of criteria, including comparative factor loadings, semantic logic and the overall congruence of the items, items 8, 38, 43, 45, and 47 were removed from the initial 48-item questionnaire. The remaining 43 items provided factors with 23 items (Factor 1: General Avoidance), 11 items (Factor 2: Emotional Avoidance) and 9 items (Factor 3: Conflict Avoidance). The order of the items ranked by loading changed little in the final 43-item questionnaire, as can be seen in Table 3.

The final GSAQ items with the scoring key appear in Appendix 8: The 43-item General and Specific Avoidance Questionnaire (GSAQ) and Scoring Key. An additional Parallel Analysis (O'Connor, 2000) suggested a three factor extraction at the 95th and 99th percentiles, which confirmed the three-factor scree-plot extraction for the final questionnaire.

Table 3: Examples of items from the three factors of the 43-item GSAQ (Subsample 1 and Subsample 2 combined).

Factor	Item No.	Item wording	Loading
Factor 1	GSAQ5_F1	I try to avoid having to deal with the situation	.671
	GSAQ39_F1	I think to myself that I have to deal with the situation, but don't do anything about it	.647
	GSAQ40_F1	Under pressure, I prefer to sit tight and hope it all goes away	.601
Factor 2	GSAQ20_F2	I try not to think about previous bad experiences	.742
	GSAQ35_F2	I try to forget about unpleasant things I have experienced	.723
	GSAQ18_F2	I try to ignore memories of difficult situations	.696
Factor 3	GSAQ8_F3	I deal with tension between me and other people because it won't go away by itself	.722
	GSAQ21_F3	I deal with conflict between me and other people rather than ignoring it	.636
	GSAQ26_F3	In difficult situations with others, I tend to just leave it and walk away	.549

Factor 1: General Avoidance. **Factor 2**: Emotional Avoidance. **Factor 3**: Conflict Avoidance.

The final scale uses a dichotomised response format and minimum and maximum scores therefore range between 0 and 43 for the overall 43-item GSAQ, between 0 and 23 for General Avoidance, between 0 and 11 for Emotional Avoidance and between 0 and 9 for the Conflict Avoidance scale.

2.3.5 Reliability Analysis

2.3.5.1 Test-Retest Reliability

A number of researchers consider avoidance coping as a trait (for example, Gámez, *et al*., 2011; Ottenbreit & Dobson, 2004), and indeed results from the development of the CBAS strongly suggested that avoidance coping is a trait-like dimension (see

Ottenbreit & Dobson, 2004). In the light of this evidence it was expected that the test-retest reliability of the GSAQ would also show a relatively high degree of stability over time.

The confirmatory factor analysis which follows in Chapter 3: Confirmatory Factor Analysis was based on an independent sample of participants, labelled Sample 3. This sample was also used for the concurrent validation described in Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms and the sample will be described briefly again in these chapters. Sample 3 comprised the 147 participants (from an initial sample of 205) who provided usable returns to the questionnaire package. All participants in the full sample were given the opportunity to take part in the concurrent and retest surveys.

Voluntary participants were given the opportunity to enter a NZ$100.00 Amazon.com voucher draw, should they complete the General and Specific Avoidance Questionnaire (GSAQ), all the concurrent scales, and subsequent retest of the GSAQ. The majority of participants were female (n = 126; M_{age} = 38.83 years; SD_{age} = 11.49), one person did not indicate his or her gender, and the rest were male (n = 20; M_{age} = 45.35; SD_{age} = 13.28). Sample 3 data was collected in New Zealand, yet the sample comprised a fairly diverse range of nationalities, and included individuals presenting themselves as New Zealanders (n = 78), New Zealander/European (n = 22) and New Zealander/Maori (n = 7) made up the largest portion of the sample. Other nationalities represented were for example British (n = 13), European (n = 7). Other nationalities were represented in smaller numbers: American (n = 1), Australian (n = 4), German (n = 2), Indian (n = 2), Irish (n = 1), Italian (n = 1), Romanian (n = 2), South African (n = 1), and Other (n = 5).

A link to a secure online copy of the GSAQ was sent to the participants who agreed to take part in the retest analysis a month after they had first completed it. Follow-up reminders were sent to those who did not respond during the following month, and in the end 109 participants provided usable responses, with an average of 48 days between initial and retest completion of the GSAQ (range: 30 – 107 days). A

subset of the total sample (n = 47) completed the retest between 47 – 107 days, and the results from this retest sample and subset are reported separately in Table 4.

Table 4: Test-retest reliability coefficients for the overall sample (N = 109) and subset (n = 47).

	Total Retest Sample (N=109)	**Subset (n=47)**
	30 – 107 Days (Ave 48 days)	46 – 107 Days (Ave 62 days)
GSAQ_F1	.844	.914
GSAQ_F2	.780	.852
GSAQ_F3	.822	.827
GSAQ_Tot	.873	.910

F1: General Avoidance; F2: Emotional Avoidance; F3: Conflict Avoidance; GSAQ: Total GSAQ
All correlations are statistically significant at the 0.01 level.

The table shows that overall retest coefficients ranged between 0.780 and 0.873. For the subset that completed the retest between 47 and 107 days the coefficients were marginally higher, ranging between 0.827 and 0.914, indicating that the GSAQ and its subscales are stable over relatively extended periods.

2.3.5.2 Coefficient Alpha for the 43-item GSAQ

Alpha coefficients were calculated for the overall sample used in the exploratory factor analyses (Subsample 1 and Subsample 2) of the GSAQ as well as the Sample 3 test-retest subsample of 109 participants. Reverse-keyed items were recoded before the analysis and the results are summarised in Table 5, with the data for the two subsamples in the factor analysis sample broken down into the two subsamples as well as the overall sample. Coefficient alpha for the Sample 3 retest group has also been included for additional validation in a second adult sample. The table

shows that the reliability of the refined 43-item GSAQ was highly acceptable across all samples.

Table 5: Summary of coefficient alpha obtained for the 43-item GSAQ (Subsample 1 and 2, Combined and Sample 3 Retest Group).

Scale	Subsample 1	Subsample 2	Combined	Sample 3 Retest Group
Total GSAQ	0.937	0.922	0.933	0.935
General Avoidance	0.921	0.899	0.915	0.909
Emotional Avoidance	0.846	0.749	0.818	0.847
Conflict Avoidance	0.832	0.795	0.817	0.842

2.4 Descriptive Statistics

2.4.1 Factor Correlations

Although all of the correlations were statistically significant ($p<.01$), they are nonetheless relatively modest. As would be expected in a scale with a general factor, the correlations between each of the Emotional and Conflict Avoidance factors and the General Avoidance factor were relatively higher, but a coefficient of determination indicates that even the highest of them accounts for just over 50% of common variance. The results suggest that the three factors of General Avoidance, Emotional Avoidance and Conflict Avoidance assess three relatively discrete aspects of avoidance coping. The factor correlations for Subsample 1 and Subsample 2 used during the exploratory factor analysis are presented in Table 6.

Table 6: GSAQ Factor Correlations

Subsample 1				**Subsample 2**				**Combined Sample**			
	F1	F2	F3		F1	F2	F3		F1	F2	F3
F2	0.544			F2	0.524			F2	0.555		
F3	0.651	0.408		F3	0.717	0.434		F3	0.674	0.421	
GSAQ	0.927	0.769	0.777	GSAQ	0.944	0.730	0.820	GSAQ	0.938	0.763	0.788

F1: General Avoidance; F2: Emotional Avoidance; F3: Conflict Avoidance; GSAQ: Total GSAQ

All correlations are statistically significant at the 0.01 level.

2.4.2 Sample and Gender Differences

A summary of the descriptive statistics (means and standard deviations) for the separate and combined samples appears in Table 7 and Table 8.

A manipulation check using Levene's Test for Equality of Variances indicated that there is equality of variances (all the values were $p>.05$; Brace, *et al*., 2006). An independent samples *t*-test for the combined samples showed that females scored significantly higher on all three factors, and these results are summarised in Table 7.

Table 7: Descriptive Statistics and Gender Differences for the Combined Subsample 1 and Subsample 2 scores on the GSAQ

Combined Sample Gender Differences (Independent Samples *t*-tests*)					
Scale Mean (SD)	Total Sample (N = 264)	Males (n = 73)	Females (n = 191)	*t*	*p*
General Avoidance	5.20 (5.554)	3.88 (5.518)	5.70 (5.498)	-2.410	<0.05
Emotional Avoidance	5.03 (3.190)	4.11 (3.058)	5.38 (3.176)	-2.941	<0.01
Conflict Avoidance	2.58 (2.470)	1.93 (2.299)	2.83 (2.493)	-2.682	<0.01
GSAQ	12.81 (9.590)	9.92 (9.607)	13.92 (9.370)	-3.08	<0.05

Scores for Males and Females ranged equally for all scales:
General Avoidance (0-22); Emotional Avoidance (0-11); Conflict Avoidance (0-9) and Total GSAQ (0-42).

*Levene's test for equality of variance was $p>0.05$ in all instances.

Females (M = 5.70) scored significantly higher on General Avoidance than males (M = 3.88). Females (M = 5.38) also scored significantly higher than males (M = 4.11) on Emotional Avoidance as well as Conflict Avoidance, with males (M = 1.93) scoring lower than females (M = 2.83) on the latter scale. The gender differences for Total Avoidance scores were also statistically significantly different, with a mean difference of 3.998 between females (M = 13.92) and males (M = 9.92).

The two subsamples differed in being drawn from general working populations (Subsample1) and undergraduate students (Subsample 2), and to explore gender and sample differences between samples the data were entered into 2 (gender) by 2 (sample) Analyses of Variance (ANOVA) for each of the three factors and for total avoidance. The findings are summarised in Table 8.

Table 8: Descriptive Statistics, Sample and Gender Differences for the Combined Subsample 1 and Subsample 2 scores on the GSAQ

Subsample and Gender Differences (2*2 Analysis of Variance - ANOVA)									
	Subsample 1			**Subsample 2**			**Sample Effects**		**Gender Effects**
Means (SD)	Subsample (N = 151)	Males (n = 57)	Females (n = 94)	Subsample (N = 113)	Males (n = 16)	Females (n = 97)	F (1,260)	partial η^2	F (1,260)	partial η^2
General Avoidance	4.09 (5.234)	3.46 (5.271)	4.47 (5.201)	6.68 (5.643)	5.38 (6.270)	6.90 (5.539)	6.396*	0.024	2.173	0.008
Emotional Avoidance	4.46 (3.312)	3.89 (3.115)	4.81 (3.396)	5.79 (2.861)	4.88 (2.802)	5.94 (2.857)	4.553*	0.017	3.997*	0.015
Conflict Avoidance	2.44 (2.494)	1.92 (2.238)	2.77 (2.596)	2.77 (2.435)	2.00 (2.582)	2.90 (2.400)	0.079	0.000	5.056*	0.019
GSAQ	10.99 (9.338)	9.26 (9.418)	12.04 (9.180)	15.24 (9.414)	12.25 (10.221)	15.73 (9.238)	5.085*	0.019	4.473*	0.017

* Sample mean differences are significant at the $p < 0.05$ level

A significant main effect was found on Total Avoidance for gender (p<.05) and sample source (p<.05). Subsample 1 reported a lower mean (Total: M = 10.99; Males: M =

9.26; Females: *M* = 12.04) Total Avoidance compared to Subsample 2 (Total: *M* = 15.24; Males: *M* = 12.25; Females: *M* = 15.73).

Performing the same ANOVA on General Avoidance yielded a statistically significant main effect only for sample ($p<.05$) but not for gender ($p=0.142$). The working adult sample, Subsample 1 (Total: *M* = 4.09; Males: *M* = 3.46; Females: *M* = 4.47) reported lower mean General Avoidance compared to the younger student sample, Subsample 2 (Total: *M* = 6.68; Males: *M* = 5.38; Females: *M* = 6.90).

Sample ($p<.05$) and gender ($p<.05$) main effects on Emotional Avoidance were also statistically significant, with Subsample 1 (Total: *M* = 4.46; Males: *M* = 3.89; Females: *M* = 4.81) reporting lower mean Emotional Avoidance compared to Subsample 2 (Total: *M* = 5.79; Males: *M* = *4*.88; Females: *M* = 5.94).

On the Conflict Avoidance factor gender ($p<.05$) indicated a significant main effect, but not sample source ($p=0.779$). Nevertheless, the working adult sample, Subsample 1 (Total: *M* = 2.44; Males: *M* = 1.91; Females: *M* = 2.77) reported lower Conflict Avoidance than the student sample, Subsample 2 (Total: *M* = 2.77; Males: *M* = 2.00; Females: *M* = 2.90). There were no interaction effects for gender and sample source on the GSAQ scales.

Although the sample sizes comprising different nationalities in the combined sample were all fairly small, an exploratory ANOVA was run for all three factors and the total avoidance scale to test for any main effects of nationality. Apart from a modest main effect on Emotional Avoidance ($F(7,256) = 2.056$, $p<.05$, partial $\eta^2 = 0.053$), no significant main effects were found on any of the scales. Further exploration employing Bonferroni ($p<.05$) and Tukey HSD ($p<.05$) post-hoc analysis revealed that the significant differences occurred only between group 1 (British; *n* = 89; *M* = 5.596; *SD* = 3.129) and group 2 (New Zealander/NZ European; *n* = 27; *M* = 3.185; *SD* = 3.039), and in view of the large sample size differences and only a single finding amongst multiple simultaneous analyses, this result may well be spurious.

2.5 Source of the items

The items on the three factors comprising the final GSAQ were derived from the three diverse sources of the Scenario Study, the Life Domains study and the Coping Responses Questionnaire (CSQ) developed by Roger, *et al*. (1993). The Life Domains study was the least prescriptive source, asking participants to describe briefly a personal scenario of choice relating to the various life domains (See Appendix 2: Scenarios and Life Domains Questionnaire & Related Documents) and to say what they did to cope with the situation. The CSQ items, by contrast, were simply adopted from an existing scale, and it is noteworthy that items which loaded on the factors came from all three sources.

Indeed, the ratio of items loading on Factor 1, 2 and 3 on the overall questionnaire is similar to the ratio of items loading on Factor 1, 2 and 3 from the different item sources. For example, twelve items from the Life Domains study were originally included in the 67-item questionnaire, and ten of the twelve items loaded on the final 43-item questionnaire, with six loading on Factor 1 and two each on factors 2 and 3. Four items from the CSQ loaded on the 43-item GSAQ, with one of these loading on Factor 2, and three items loading on Factor 1. The largest number of items was derived from the scenario study and out of the 29 items from the scenario study loading on the final 43-item GSAQ, seven loaded on Factor 3, eight on Factor 2 and the other 14 items loaded on Factor 1.

2.6 Discussion and Conclusions

The review in Chapter 1: Introduction and Literature Review outlined the psychometric problems associated with previously-developed general coping scales and also more recently developed multidimensional avoidance scales. The review also summarised the biases inherent in the overuse of theoretically derived items, simple face-valid items, items based on clinical experience, and using items from previously developed coping scales. For the new General and Specific Avoidance Questionnaire (GSAQ) items were derived primarily from a scenario technique (see for example Forbes & Roger, 1999) to elicit more objective and unbiased responses,

and the thesis author added a Life Domains Questionnaire to enhance the qualitative nature of the Scenarios. The 10 items from the CSQ were simply adopted into the new item pool, but they were themselves derived from a scenario study, and in fact only four of them were included in the final scale.

Participants in the item generation exercises were drawn from the general public as well as student samples, representing a wide representative range in age and occupational experience, and the gender split was approximately equal. The 67 items in the initial item pool were subjected to appropriate psychometric procedures to arrive at the final 43-item GSAQ: a scree plot to decide factor numbers (rather than the eigenvalue-1 criterion typically used in previous scales – see for example Brace, *et al*., 2006; Brown, 2006; Cattell, & Vogelmann, 1977; Costello & Osborne, 2005; DeVellis, 2003; Hinkin, 1995 for a critique), followed by Principal Axis Factoring with varimax orthogonal rotation to a terminal solution using a conservative 0.35 loading criterion. The exploratory structure was tested with a variety of rotations, and Parallel Analysis (O'Connor, 2000) endorsed the three factor extraction at the 95^{th} and 99^{th} percentiles. Based on the content of items loading on the three factors, they were named General Avoidance, Emotional Avoidance and Conflict Avoidance.

The structure of the final GSAQ was further endorsed using Confirmatory Factor Analysis, which has often been omitted in the construction of previous scales; this will be discussed in Chapter 3: Confirmatory Factor Analysis. For the three factors that formed the scale, internal subscale reliability was highly satisfactory in both Subsamples 1 and 2, as well as the retest sample, confirming that the items within each scale are assessing similar constructs. Previous scales have also often omitted any test of temporal stability – for example, there is no indication of retest reliability reported for the MEAQ (Gámez, *et al*., 2011) – and a further advantage of the GSAQ is demonstrably robust retest reliability over a 30 to 107 day period, indicating that avoidance coping measured by the GSAQ represents a relatively stable trait.

The subscales of the GSAQ were only moderately correlated, suggesting that the three factors measure relatively discrete forms of avoidance coping. This finding was replicated in both the diverse working adult and the undergraduate subsamples. Higher scores on the GSAQ subscales indicate greater reliance on avoidance coping strategies, and in both subsamples females scored significantly higher than males on the total scale as well on the subscales separately. Subsample 2 (undergraduate students) scored higher on all the avoidance scales than Subsample 1 (working adults), but the difference was not significant on Conflict Avoidance.

In contrast to most existing coping scales, the aim of the GSAQ was to generate items in a more objective way and to use appropriate psychometric procedures to arrive at a final new avoidance coping scale. These objectives were met, and subsequent chapters will discuss further validation of the GSAQ using psychometric techniques, including more robust confirmatory factor analysis, as well as experimental studies using the new scale.

Chapter 3: Confirmatory Factor Analysis[4]

3.1 Introduction

The GSAQ was developed using a range of qualitative and quantitative techniques, and Exploratory Factor Analysis (EFA) was used to extract a reliable three-factor structure for the new GSAQ. EFA determines the underlying structure of a set of questionnaire items, but it does not include a formal test of significance (Brace, *et al*., 2006; DeVellis, 2003). To test or confirm that the underlying structure of the data fits the EFA model requires a subsequent Confirmatory Factor Analysis (CFA – Brace, *et al*., 2006; Brown, 2006; DeVellis, 2003), which as a form of Structural Equation Modelling (SEM) is hypothesis-driven and can test the relationship between observed indicators such as questionnaire items and latent variable such as factors (Brown, 2006).

Although EFA followed by CFA has become the standard procedure for test construction, the review of avoidance reported in Chapter 1: Introduction and Literature Review of this thesis pointed out that neither of the two most recently developed avoidance coping questionnaires – the CBAS (Ottenbreit & Dobson, 2004) and the MEAQ (Gámez, *et al*., 2011) – employed CFA. The aim of Chapter 2: General and Specific Avoidance Questionnaire Development in the thesis was to present a comprehensive validation of the new GSAQ, and this chapter presents a confirmatory factor analysis of the scale. This will be followed by a series of concurrent validation analyses which will be reported in Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms.

3.2 Model Fit Indices

CFA determines the model fit by examining a number of goodness-of-fit indices (Brown, 2006; Rogelberg, 2004). The most commonly used is Chi-square (χ^2),

[4] The main findings of chapters 1, 2, 3, 4, and 5 were accepted and presented as a paper at the 33rd International Conference of the Stress and Anxiety Research Society (STAR), Palma de Mallorca, Spain (2 – 4 to July 2012).

which is seldom used as the only indicator owing to its sensitivity to sample size and non-normal data (Bentler, 1990; Brown, 2006; Rogelberg, 2004). However, χ^2 can be used to calculate other goodness-of-fit indices, such as the Tucker-Lewis Index (TLI – see Brown, 2006). The model fit indices used to test the fit of the three-factor GSAQ are briefly described below, and can broadly be classified into three categories: Absolute Fit indices (χ^2), Comparative or Incremental Fit indices (CFI and TLI), and Parsimony Correction indices (RMSEA) (Brown, 2006; Rogelberg, 2004).

The χ^2 statistic indicates a good fit when the resultant value is small, but there is a probability-level attached to it which corresponds to the number of degrees of freedom (Rogelberg, 2004). If χ^2 is statistically significant, the alternative hypothesis is accepted: that the model estimates do not sufficiently reproduce the sample variances and covariances (Brown, 2006). In other words, the model does not fit when χ^2 is statistically significant.

The Comparative Fit Index (CFI) has many desirable properties (Rogelberg, 2004) and is among the best 'behaved' fit indices available (Brown, 2006). It ranges between 0.0 – 1.0, with values over 0.90 indicating good fit, and values over 0.95 indicating very good fit (Brown, 2006; Rogelberg, 2004). The Tucker-Lewis Index (TLI) is also a very popular and a 'well-behaved' (Brown, 2006) index, and is sometimes also referred to as the Non-Normed Fit Index (NNFI). TLI compensates for model complexity by including a penalty function for freely estimated parameters not improving the model fit (Brown, 2006). It is non-normed and its values can fall outside the range of 0.0 – 1.0, but values closer to 1.0 indicate a good fit (Brown, 2006).

The Root Mean Square Error of Approximation (RMSEA) is a highly recommended Parsimony Correction index (Brown, 2006; Rogelberg, 2004) and incorporates a penalty function for poor model parsimony (Brown, 2006). It assesses to what extent the model appears to fit the population data reasonably well, whereas the χ^2, for example, tests whether the model fits the population exactly (Brown, 2006). The RMSEA values range between 0.0 – 1.0, but lower RMSEA

values indicate better fit, in other words, values less than 0.08 reflect good fit and less than 0.05 very good fit (Brown, 2006; Rogelberg, 2004).

An in-depth discussion of the statistical nature of CFA and the calculation of the goodness of fit indices is beyond the scope of this thesis. However, a discussion of the parcelling strategy used for the CFA of the GSAQ is included, and some comments about the problems associated with CFA when dealing with large numbers of questionnaire items will be noted as well as techniques to deal with these potential challenges.

3.3 Item Parcelling

Confirmatory factor analysis based on item parcels rather than individual items has been well-documented as a technique for dealing with large numbers of items, non-normal data and small sample sizes (see for example Bandalos, 2002; Little, Cunningham, Shahar, and Widaman, 2002). In summary, parcels (or "testlets") are the simple sums of several items assessing the same construct (Brown, 2006; Kishton & Widaman, 1994). From the individual scale items, several parcels are developed by assigning every item to only one parcel. All the scale items are used in constructing parcels which may then be used to represent the latent construct assessed by the instrument (Kishton & Widaman, 1994).

The earliest users of parcelling techniques to reduce the number of items, and therefore facilitate more succinct CFA model estimation, were Cattell (1956) and Cattell & Burdsal (1975). Since then the methodology for parcelling has been extensively reviewed and refined (see for example: Bandalos, 2002; Brown, 2006; Hall, Snell, Singer Foust, 1999; Holt, 2004; Kishton & Widaman, 1994; Little, *et al*., 2002). These authors all agree that there are definite benefits to parcelling but that it should be conducted with care, following recommended and tested methodology. A brief overview of the merits of parcelling techniques and their effects on, for example, goodness-of-fit indices and parameter estimation is outlined below.

Based on large dichotomously-scaled questionnaires, Kishton and Widaman (1994) indicated that parcelling can improve goodness-of-fit indices, and can also provide CFA benefits when working with large scales using data from small samples. However, their caveats include the requirement for items being assigned randomly to parcels, parcels having sufficient internal consistency (alpha >.60), and parcels being unidimensional. Other authors have expanded on this by assessing the effect of different parcel combinations, assigning items assessing similar constructs to different parcels within the construct to assess the effect on goodness-of-fit indices and parameter estimates (Hall, *et al*., 1999). These results indicated that items could be assigned randomly to parcels, but the unidimensionality of the parcel item set was also noted as a prerequisite, as well as the ratio of the first factor extracted from the parcel needing to be at least 2.5 times that of a secondary factor. A further suggestion was to try only a few item combinations for each parcel to assess whether it improves the model fit, as exploring all possible combinations can prove tedious (Hall, *et al*., 1999).

Bandalos (2004) reports that parcelling improved model fitting solutions, and in particular referred to improved values for the RMSEA, CFI and χ^2 the goodness-of-fit indices included in this thesis. The author noted that parcelling can ameliorate the effects of coarsely categorised and non-normally distributed item-level data only when the item parcels are unidimensional, and if the factor structure is unknown, using multidimensional item parcels can result in misleading results. Bandalos (2004) also notes that parcelling could improve model fit when working with small samples (e.g. 100 – 250), as model rejection seems inflated when parcelling is not used. In a similar vein, Little, *et al*., (2002) emphasise understanding the dimensionality of the items to be parcelled, and refer to Kishton and Widaman (1994) for techniques to assess and deal with multidimensionality. Holt (2004) comments that more rather than fewer items could be assigned per parcel provided the unidimensionality of the parcelled items can be maintained, and cautions that parcelling may obscure the underlying structure of the scale if this is not known.

Parcelling clearly has benefits when conducted within the recommended parameters. With regard to the GSAQ, the underlying structure of the GSAQ is known based on the EFA described earlier in the thesis. As a second step, full item-based CFA was conducted to assess the model fit for one, two or three-factors, before parcelling was attempted and used in a second set of parcel-based CFAs.

3.4 Method

Two English-speaking samples were included for the Confirmatory Factor Analysis (CFA). The samples included students as well as working adults. The English-speaking samples were voluntary research participants and comprised a sample from New Zealand (NZ - Sample 3) and from the United Kingdom (UK - Sample 4). The data from these samples was also used during the concurrent validity analysis (Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms) and retest phase of the research project. Data from Sample 4 from the UK was also used for the deliberate self-harm study reported in Chapter 6: Avoidance Coping and Deliberate Self-Harm. The samples were completely different from the English-speaking samples used during the EFA scale development phase. The samples are described briefly in the next section.

The data collected from outside of New Zealand and used for the study reported here were collected with the assistance of exceptionally helpful and experienced researchers in the respective countries. Sample 4 data was collected with the help of Dr. Jo Borrill at the University of Westminster in London, England, who also assisted with the institutional ethics approval at the University of Westminster, based on the approval obtained through the University of Canterbury Human Ethics Committee (HEC) in New Zealand.

3.5 Samples

3.5.1 Sample 3: New Zealand

Of the 205 New Zealand residents from Sample 3 who took part in the concurrent validity section of the thesis, 170 provided complete, usable responses for the CFA. The mean age of the sample was 40.25 years (*SD* = 11.94), ranging from 18 – 72 years. The majority of participants were female (*n* = 144) with ages ranging between 19 – 72 years (*M* = 39.05; *SD* = 11.45, one person did not indicate their age), one person did not indicate his or her gender, and the rest were male (*n* = 25) with ages ranging between 18 - 63 years (*M* = 47.12; *SD* = 12.61). Sample 3 data were collected in New Zealand, with the majority of participants identifying themselves as New Zealanders (*n* = 125), and 132 stated that they were adults in full-time employment.

3.5.2 Sample 4: United Kingdom (UK)

Sample 4 participants were recruited as part of the further concurrent validation study reported in Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms and the Deliberate Self-Harm study reported in Chapter 6: Avoidance Coping and Deliberate Self-Harm. First year psychology students at the University of Westminster, London, volunteered to participate in the study which included a number of concurrent scales and the English version of the GSAQ. Participants received course credit as part of the University's research participation scheme. Of the 242 responses, 186 provided complete and usable returns for the CFA study. The sample comprised mainly females (*n* = 168) between the ages of 18 to 43 years (*M* = 19.89; *SD* = 4.46; two participants did not indicate their age). The ages of the 18 males ranged between 18 and 26 years (*M* = 19.25; *SD* = 1.95; two participants did not indicate their age). Most participants indicated they were British (*n* = 113), British Other (*n* = 25), or European (*n* = 15). The remainder indicated either "Other" or no nationality (*n* = 33).

3.6 Item-Based CFA Results

The first step was to assess the model fit for the data from Sample 3 using item-based CFA for a one-factor, two-factor and three-factor solution. All 43 items were entered into the model for each of the three tests. The next step was to allocate items to parcels based on the recommendations discussed earlier, and conduct parcel-based CFA for the samples to confirm the factor structure. The robust maximum likelihood estimation method was used, and modification indices as appropriate in AMOS version 19 software (Brown, 2006). All the latent variables (factors) were allowed to covary and no constraints were imposed on the variances.

For Sample 3 (New Zealand), the one-factor model indicated that most regression weights were significant at the $p < 0.001$ level, but the items associated with Factor 2 from the EFA appeared to load only marginally on the one-factor model, with just six of the eleven items significant at the $p < 0.01$ level. The two-factor model suggested a better fit, but for the three-factor model all the regression weights of all the items on Factor 1, Factor 2 and Factor 3 were significant at the $p < 0.01$ level, with the vast majority (apart from items GSAQ9 and GSAQ12) significant at the $p < 0.001$ level. Apart from RMSEA, none of the goodness-of-fit indices indicated a satisfactory fit for any of the models, but the values of the fit indices did suggest that the three-factor model was the most acceptable for Sample 3 (See Table 9).

Item-based results for Sample 4 (United Kingdom) CFA failed to provide consistent evidence for a satisfactory fit but again favoured the three-factor model, particularly the RMSEA index (RMSEA = 0.059). Most of regression weights were significant at the $p < 0.001$ level, with three regression weights significant at the $p < 0.005$ level and one significant at $p = 0.013$.

Table 9: Summary of goodness-of-fit indices for one, two and three-factors for the item-based CFA

	Sample 3 (New Zealand)			Sample 4 (United Kingdom)		
	Number of Factors			Number of Factors		
	1	2	3	1	2	3
χ^2	1824.79	1564.11	1509.35	1560.64	1456.28	1413.74
df	860	859	857	860	859	857
χ^2 *p*	0.000	0.000	0.000	0.000	0.000	0.000
CFI	0.632	0.731	0.751	0.627	0.682	0.703
TLI	0.614	0.717	0.738	0.608	0.666	0.688
RMSEA	0.081	0.070	0.067	0.066	0.061	0.059

χ^2 = Chi-square
df = degrees of freedom
p = Significance level of χ^2 (*p* <0.05 means the model fit is unsatisfactory)
CFI = Comparative Fit Index (>0.90 is good; >0.95 is very good)
TLI = Tucker-Lewis Index (>0.90 is good; >0.95 is very good)
RMSEA = Root Mean Square Error of Approximation (<0.08 is good; <0.05 is very good)

In summary, it appears from the item-based analyses that three factors provide the best fit, but only RMSEA provided acceptable values and all the χ^2 values were $p < 0.001$. An alternative suggestion for deciding between competing models, is to test the difference in the Chi-square values (χ^2_{diff}) between the two competing models and comparing this value to the critical χ^2 value (χ^2_{crit}) at the related df_{crit} (the difference between the *df* of the two competing models – see Anderson & Gerbing, 1988; Brown, 2006; Schermelleh-Engel, Moosbrugger & Müller, 2003). The following formula was used to calculate χ^2_{diff} as suggested by Schermelleh-Engel, *et al*. (2003):

$$\chi^2_{diff}\,(df_{diff}) = \chi^2_A(df_A) - \chi^2_B(df_B)$$

χ^2_A is the value denoted to the model with the fewer number of factors in this thesis with related df_A. χ^2_B is the value obtained for the model with more factors with the related df_B.

The results summarised in Table 10 indicates that both the three-factor and two-factor models provided a significantly better fit than the one-factor model for both samples, although the three-factor model only provided a significantly better model than the two-factor model for Samples 3 and 4 at the $p < 0.001$ level. The χ^2_{diff} is also sensitive to sample size (similar to the χ^2), and in large sample sizes even small differences may become significant (Schermelleh-Engel, *et al*., 2003).

Table 10: Summary of χ^2_{diff} results for the item-based CFA

	Sample 3 (New Zealand)			**Sample 4 (United Kingdom)**		
Factors	χ^2_{diff}	df_{diff}	p	χ^2_{diff}	df_{diff}	p
1 vs. 2	260.68	1	< 0.001	104.36	1	< 0.001
1 vs. 3	315.44	3	< 0.001	146.90	3	< 0.001
2 vs. 3	54.76	2	< 0.001	42.54	2	< 0.001

χ^2_{diff} = Chi-square difference
df_{diff} = degrees of freedom difference
p = Significance level. ($p < 0.05$ means the model difference is statistically significant)

3.7 Parcel Descriptions

As described earlier, item-parcelling provides a way of overcoming many of the problems incurred by item-based analyses and dealing with non-normal data, small sample sizes, and large numbers of questionnaire items. The prior EFA results had provided a clear indication of the structure of the GSAQ, and to test the structure more reliably, item parcels were composed following published recommendations (Bandalos, 2002; Brown, 2006; Hall, *et al*., 1999; Holt, 2004; Kishton & Widaman, 1994; Little, *et al*., 2002).

Parcels were generated (see example in Table 11) for Sample 3 (New Zealand working adults) and then replicated for the other sample, once they had satisfied criteria. The parcels for Sample 3 had satisfactory internal consistency, and for both samples the eigenvalues and scree plots suggested uniformity. Eigenvalue-1

has been widely criticised for extracting too many factors and yielding less parsimonious factor structures, and the results from the scree plots provided a better indication of parcel dimensionality (Brace, *et al*., 2006; Brown, 2006; Cattell, & Vogelmann, 1977; Costello & Osborne, 2005; DeVellis, 2003; Hinkin, 1995).

Table 11: Parcel descriptions for Sample 3 (New Zealand) parcel-based CFA.

		Items	Alpha	Eigen > 1	Eigen > 2	Scree
Factor 1	GSAQ_F1_P1	6	0.665	1	1	1
	GSAQ_F1_P2	6	0.703	1	1	1
	GSAQ_F1_P3	6	0.704	2	1	1
	GSAQ_F1_P4	5	0.658	1	1	1
Factor 2	GSAQ_F2_P1	4	0.600	1	0	1
	GSAQ_F2_P2	4	0.623	1	0	1
	GSAQ_F2_P3	3	0.529	1	0	1
Factor 3	GSAQ_F3_P1	5	0.708	1	1	1
	GSAQ_F3_P2	4	0.674	1	1	1

E.g.: GSAQ_F1_P1 = Factor 1, Parcel 1, etc.

The Sample 4 (United Kingdom university students) parcels indicated fairly low alpha coefficients, ranging between 0.269 and 0.664. Only three of the nine Sample 4 parcels' alphas were less than 0.50 and four parcels had alphas well above 0.50. Following suggestions by Hall, *et al*. (1999) a few parcel combinations were attempted to improve the internal consistency of the parcels, and the most adequate (for example, most alpha coefficients > 0.50, except for one) parcel combinations that were decided upon have been included in this thesis as a subsidiary analysis to assess how different parcel combinations affect the goodness-of-fit indices for the GSAQ. The subsidiary parcel combinations for Sample 4 indicated much improved unidimensionality and alphas of mostly above 0.60 for Sample 4 with the exception of one parcel above 0.45. The results from this subsidiary parcel-based CFA is

reported in Appendix 9: Subsidiary parcel-based confirmatory factor analysis for Sample 4 (United Kingdom).

3.8 Parcel-Based CFA Results

Table 12: Summary of goodness-of-fit indices for one, two and three-factors (Parcel-based CFA)

	Sample 3 (New Zealand)			**Sample 4 (United Kingdom)**		
	Number of Factors			Number of Factors		
	1	2	3	1	2	3
χ^2	303.33	127.67	49.21	184.156	67.51	28.29
df	27	26	24	27	26	24
χ^2 *p*	0.000	0.000	0.002	0.000	0.000	0.248
CFI	0.737	0.903	0.976	0.779	0.942	0.994
TLI	0.649	0.866	0.964	0.705	0.919	0.991
RMSEA	0.246	0.152	0.079	0.177	0.093	0.031

χ^2 = Chi-square
df = degrees of freedom
p = Significance level of χ^2 (*p* <0.05 means the model fit is unsatisfactory)
CFI = Comparative Fit Index (>0.90 is good; >0.95 is very good)
TLI = Tucker-Lewis Index (>0.90 is good; >0.95 is very good)
RMSEA = Root Mean Square Error of Approximation (<0.08 is good; <0.05 is very good)

For Sample 3 from New Zealand (χ^2 = 49.21, *df* = 24, *p* = 0.002; CFI = 0.976; TLI = 0.964 and RMSEA = 0.079), the three-factor parcel-based CFA indicated the most favourable fit (see summary in Table 12), especially compared with the corresponding results from the item-based CFA. All the regression weights were significant at $p < 0.001$. The modification indices provided by AMOS version 19 indicated that the model fit can be improved by covarying a small number of error terms, and although it was decided to remain with the more modest three-factor model reported in Table 12, covarying the two error terms in Factor 1 did indeed

improve the model (χ^2 = 43.983, *df* = 23, *p* = 0.005; CFI = 0.980; TLI = 0.969 and RMSEA = 0.073).

The results reported for Sample 4 (United Kingdom) followed a similar trend to that of Sample 3 (New Zealand), and overall suggests substantially better goodness-of-fit indices for the three-factor model. The data from Sample 4 (United Kingdom) fits the 3-factor model better than the other sample. Sample 3 and Sample 4 data was collected to replicate the EFA, concurrent and retest study findings in two different English-speaking samples (see for example the importance of replication in Schmidt, 2009). Table 12 summarises the different factor results for both samples, and across both samples and parcel combinations the three-factor model clearly provides the best fit (see Figure 2).

Table 13: Summary of χ^2_{diff} results for the parcel-based CFA

	Sample 3 (New Zealand)			**Sample 4 (United Kingdom)**		
Factors	χ^2_{diff}	df_{diff}	*p*	χ^2_{diff}	df_{diff}	*p*
1 vs. 2	175.66	1	< 0.001	116.65	1	< 0.001
1 vs. 3	254.12	3	< 0.001	155.87	3	< 0.001
2 vs. 3	78.46	2	< 0.001	39.22	2	< 0.001

χ^2_{diff} = Chi-square difference
df_{diff} = degrees of freedom difference
p = Significance level. (*p* < 0.05 means the model difference is statistically significant)

The results summarised in Table 13 indicates that the three-factor model provided a significantly (*p* < 0.001) better fit than the one and two-factor models for both samples.

Figure 2: Sample 3 (New Zealand) example of the confirmatory three-factor model for the GSAQ.

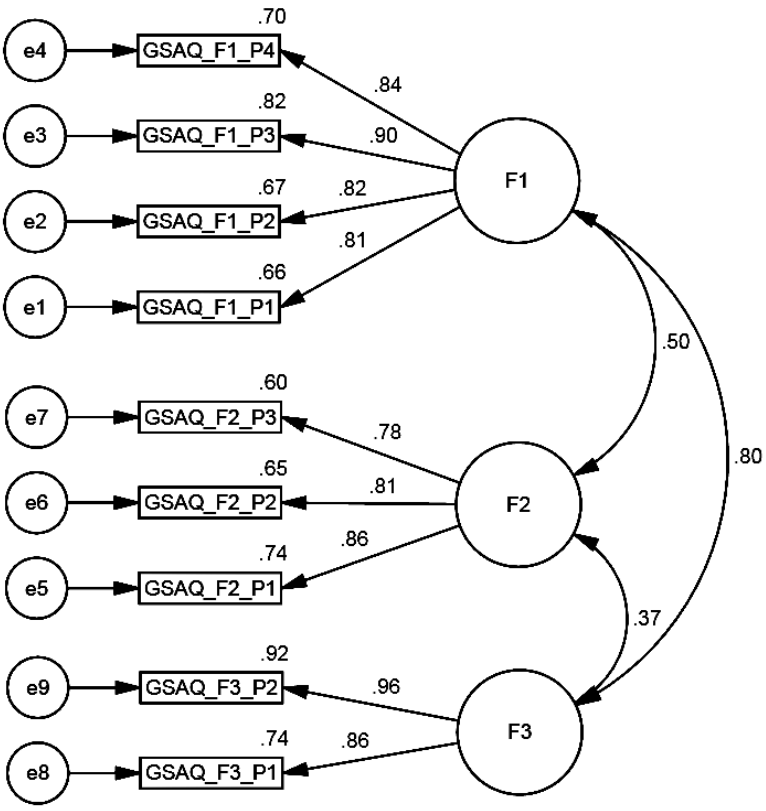


Figure 2 Notes:
Latent Variables: F1 = General Avoidance; F2 = Emotional Avoidance; F3 = Conflict Avoidance
Observed Variables: E.g. GSAQ_F1_P1 = GSAQ Factor 1 Parcel 1 used in the CFA

3.9 Discussion and Conclusions

The absence of Confirmatory Factor Analysis (CFA) has been a major shortcoming in the development of scales for assessing avoidance coping, and indeed in the development of coping scales in general. This chapter provides a rigorous exploration of the structure of the GSAQ obtained from the Exploratory Factor Analysis (EFA) described in Chapter 2: General and Specific Avoidance Questionnaire Development, and confirms the three-factor structure using CFA methodology. The analyses included two English-speaking samples from two different countries with a mix of age and experience, with one sample being

primarily younger university students and the other sample representing the older working adults, and although the samples were predominantly female, the replication of results in different age groups from different countries is encouraging.

Initial item-level CFA indicated a better fit for the three-factor model, although none of the fit indices apart from RMSEA were at an adequate level. In view of the overwhelming evidence for the advantages of parcelling methodology the item-level analyses were followed by CFA based on parcels, and the parcel-based CFA results all clearly indicated a best fit for the three-factor model in both samples. Although some authors argue that χ^2 should be the only fit index used for SEM purposes (Barrett, 2007), few statistical distributions follow χ^2 in practise (Yuan, 2005), and owing to the sensitivity of χ^2 to sample size and non-normal data it is rarely used as the only indicator of model fit (Bentler, 1990; Brown, 2006; Rogelberg, 2004). It was encouraging to find that χ^2 nonetheless indicated a best fit for the three-factor model in at least one of the samples (Sample 4 $p > 0.200$), and the superiority of the three-factor model was confirmed by the χ^2 difference tests for both samples.

Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms[5]

4.1 Introduction

Exploratory Factor Analysis (EFA) of the initial item pool yielded three factors for the new GSAQ: General Avoidance, Emotional Avoidance, and Conflict Avoidance. The internal reliability (coefficient alpha) was satisfactory for all three factors, ranging from .817 (Factor 3) to .915 (Factor 1), and results from the retest study were also satisfactory. Chapter 3 reported the Confirmatory Factor Analysis (CFA) of the new scale, which clearly confirmed the three-factor structure. This chapter explores the divergent and convergent validity of the GSAQ in two non-clinical samples across measures of psychological and physiological health.

CFA requires a sample that is independent of any samples used to establish the structure of a scale using EFA, and the confirmatory factor analyses reported in Chapter 3 were based on two independent English-speaking samples, one working adult sample from New Zealand and the other university students from the United Kingdom. The two English-speaking samples were used for the concurrent validation of the GSAQ reported in this chapter: the New Zealand sample (listed as Sample 3 in Chapter 3) and the sample from England (Sample 4 in Chapter 3). The retest reliability study reported in Chapter 2 was also based on Sample 3 (New Zealand), and as well as completing the GSAQ a second time to assess retest reliability the participants from Sample 3 were asked to complete a package of existing coping scales and measures of mental and physical health constructs which have been previously reported to have relationships with avoidance coping. Sample 4 participants also completed the package of concurrent scales, however, the Physical Symptoms Inventory (PSI) was exchanged for the Deliberate Self-Harm Inventory (DSHI) as Sample 4 was also used in Chapter 6 to assess the role of avoidance coping in deliberate self-harm.

[5] The main findings of chapters 1, 2, 3, 4, and 5 were accepted and presented as a paper at the 33rd International Conference of the Stress and Anxiety Research Society (STAR), Palma de Mallorca, Spain (2 – 4 to July 2012).

Higher use of avoidance coping, for example, has been associated with higher levels of reported depression and anxiety as well as poorer medical outcomes and lower levels of proactive coping, as reviewed in Chapter 1 (see for example Friedman, *et al*., 1992; Greenglass, Schwarzer, Jakubiec, Fiksenbaum, & Taubert, 1999; Olason, 2000; Oxlad, *et al*., 2004; Suls & Fletcher, 1985). The relationships between the GSAQ and these and other convergent and divergent constructs will be explored in this chapter. The researcher obtained all the appropriate permissions from the scale developers to use the scales in this thesis, although owing to copyright agreements the scales themselves are not displayed (full scale references are provided below).

4.2 The Samples

4.2.1 Sample 3: New Zealand Sample

Two hundred and five New Zealand-based individuals from Sample 3 took part in the Confirmatory Factor Analysis section of the thesis, and 147 provided usable responses for the concurrent validation after reviewing the data received and cleaning away incomplete responses. The majority of participants were female (n = 126) with ages ranging from 19 to 72 years (M = 38.83; SD = 11.49), one person did not indicate his or her gender, and the rest were males (n = 20) aged between 18 and 63 years (M = 45.35; SD = 13.28). Sample 3 data was collected in New Zealand, and the sample comprised a fairly diverse range of nationalities, including individuals identifying themselves as New Zealanders (n = 78), New Zealander/European (n = 22) and New Zealander/Maori (n = 7), which made up the largest portion of the sample. Other nationalities represented were for example British (n = 13), European (n = 7), and nationalities represented in smaller numbers included: American (n = 1), Australian (n = 4), German (n = 2), Indian (n = 2), Irish (n = 1), Italian (n = 1), Romanian (n = 2), South African (n = 1), and Other (n = 5). Table 14 summarises Sample 3.

Table 14: Sample 3 participants who took part in the concurrent validation study

	Sample 3 (New Zealand Sample)		
Gender	Males	Females	Combined
Sample Size*	20	126	147
Mean Age*	45.35	38.83	39.73
Median Age*	46.00	39.00	40.00
Age Range*	18-63	19-72	18-72
SD (Age)*	13.28	11.49	11.92

*One person did not indicate his or her gender

4.2.2 Sample 4: United Kingdom Sample

Sample 4 participants were recruited from the University of Westminster Psychology first year cohort. Overall 155 females aged between 18 and 43 years (M = 19.93; SD = 4.05; two participants did not indicate their ages) provided usable responses. The remainder of the usable responses were 17 males aged between 18 and 26 years (M = 19.25; SD = 1.95; one participant did not indicate their age). The male to female ratio for this sample was fairly similar to the ratio obtained in Sample 3; however, inspecting the mean age and standard deviations, Sample 4 individuals were slightly younger than Sample 3 participants, probably because Sample 3 participants were recruited from the general public whereas Sample 4 were mostly full-time (n = 155) or part-time students (n = 11), with six participants not indicating their occupation. The majority of participants indicated they were British (n = 108), British Other (n = 21) or European (n = 15), while 28 participants indicated other nationalities or did not disclose their nationality. Table 15 summarises Sample 4.

Table 15: Sample 4 participants who took part in the concurrent validation study

	Sample 4 (United Kingdom)		
Gender	Males	Females	Combined
Sample Size*	17	155	172
Mean Age*	19.25	19.93	19.87
Median Age*	19.00	19.00	19.00
Age Range*	18–26	18–43	18-43
SD (Age)*	1.95	4.05	3.90
*One male and two females did not indicate their age			

4.3 Method

As with all components of this thesis, approval was obtained from the University of Canterbury Human Ethics Committee to include the concurrent scales used to test their relationship with the GSAQ. The scales were included as part of a secure online questionnaire package and made available to the general population sample of working adults through the researcher's personal and professional networks (Sample 3). Voluntary participants were given the opportunity to enter a NZ$100.00 Amazon.com voucher draw, should they complete the General and Specific Avoidance Questionnaire (GSAQ), all the concurrent scales, and subsequent retest phase of the GSAQ. Participants were required to provide a unique user code to link their first response to the online questionnaire package, and subsequent retest responses, as well as their email address in order to send the link to the online retest GSAQ at a later date.

Additional ethics approval was received from the University of Westminster to recruit samples from the institution, due to the sensitive nature of the deliberate self-harm study and inducements offered to participants. Sample 4 participants received course credit as part of the University of Westminster's research participation scheme, and the scales were completed in a confidential secure online

questionnaire package with only their names and student numbers sent to the research collaborator to assign course credits. Sample 4 participants completed the GSAQ and the concurrent scales as described below, with the exception of the Physical Symptoms Inventory (PSI - Spector & Jex, 1998). These participants were also used to assess the relationship between avoidance coping and deliberate self harm in student samples (see Chapter 6: Avoidance Coping and Deliberate Self-Harm), and for them the Physical Symptoms Inventory was replaced by the Deliberate Self-Harm Inventory (DSHI - Gratz, 2001). Having two samples complete common scales allowed a comparison between independent samples on the CFA described in Chapter 3 as well as all of the concurrent scales except the PSI.

The concurrent scales included in the online questionnaire package were the Proactive Coping Inventory (PCI - Greenglass, *et al*., 1999; Greenglass, Schwarzer, & Taubert, 1999), the Depression Anxiety and Stress Scales (DASS21 - Lovibond & Lovibond, 1995), the Coping Styles Questionnaire (revised version CSQ3 - Roger, *et al*., 1993), the Inhibition-Rumination Scale (I-RS - Roger, Guarino de Scremin, Borril & Forbes, 2011), and for Sample 3 only, the Physical Symptoms Inventory (PSI - Spector & Jex, 1998). The scales are described in detail in the next section, together with the results of concurrent validation analyses. The complete concurrent scale correlation tables are included in Appendix 10: Concurrent Correlation Table for Sample 3: New Zealand working adults and Appendix 11: Concurrent Correlation Table for Sample 4: United Kingdom university students.

The data were prepared by recoding reverse-scored items and calculating score totals using SPSS syntax (Brace, *et al*., 2006). For each of the concurrent correlations the correlation coefficient (r) has been included as well as variance estimates (r^2), also described as coefficients of determination (Coolican, 2004; Berenson, Levine, Rindskopf, 1988; Devore & Peck, 1986). When r^2 is multiplied by 100, the result indicates the percentage of variation in the variables attributable to the correlation between the two variables. Correlation coefficients range between -1.0 and +1.0, while r^2 expressed as a percentage ranges between 0 and 100 if multiplied by 100 to provide a percentage, and provides a simpler impression

of the variance in one of the variables predictable by the variance in the second variable (Berenson, *et al*., 1988; Coolican, 2004; Devore & Peck, 1986).

4.4 The Concurrent Scales

4.4.1 Proactive Coping Inventory (PCI)

The Proactive Coping Inventory (PCI – Greenglass, *et al*., 1999; Greenglass, *et al*., 1999) has been extensively validated. The inventory has been has been translated into 13 languages, and has been widely used in research relating to coping and stress. The PCI measures skills in coping with distress as well as skills which promote greater well-being and life satisfaction, and it comprises 7 discrete scales for Proactive Coping, Reflective Coping, Preventive Coping, Avoidance Coping, Instrumental Support Seeking, Emotional Support Seeking and Strategic Planning, all assessed on a Likert-type response scale ranging from 1 = "not at all true", to 4 = "completely true." The Avoidance Scale of the PCI comprises only three items and was not included in this concurrent analysis due to the small number of items it contains.

In this thesis, only the 14-item Proactive Coping Scale (PCS) was included to assess the relationship with the three subscales of the GSAQ. The PCS combines cognitions and behaviours related to autonomous goal-setting and self-regulatory attainment of goals, by integrating motivational and intentional aspects of the volitional maintenance processes (Greenglass, Fiksenbaum & Eaton, 2006). Internal consistencies of between .79 and .87 have consistently been reported in various samples, with the majority of values exceeding .80 (see Greenglass & Fiksenbaum, 2009; Greenglass, *et al*., 2006). The PCS is consistently negatively correlated with depression (Greenglass, *et al*., 1999) and also with the three-item Avoidance Coping Scale of the PCI. Individuals who engage in proactive coping are less likely to employ avoidance coping when they have to deal with demanding situations (Greenglass, *et al*., 1999). The alpha coefficients for the scale in this thesis were 0.863 for Sample 3 (New Zealand) and 0.808 for Sample 4 (United Kingdom).

4.4.2 Depression Anxiety and Stress Scales (DASS21)

The DASS is a 42-item self-report measure of anxiety, depression and stress based on a 4-point Likert-type response scale ranging from 0 = "Did not apply to me at all" to 3 = "Applied to me very much, or most of the time" (Lovibond, 1998), and reported alpha coefficients for the three 14-item DASS scales are satisfactory (Depressio*n* = .91, Anxiety = .84, and Stress = .90; *N* = 2,914; Lovibond & Lovibond, 1995). The DASS has been translated into over twenty languages and has been widely used in research settings, both clinical and non-clinical (Crawford & Henry, 2003). A shorter 21-item version of the DASS has been developed (Psychology Foundation of Australia, 2010) comprising three scales (seven items per scale) for depression, anxiety, and stress (Psychology Foundation of Australia, 2010). The Depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia while the Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The Stress scale is sensitive to levels of chronic non-specific arousal and assesses difficulty relaxing, nervous arousal, being easily upset/agitated, irritable/over-reactive and impatient.

Although the number of items per scale is somewhat marginal the DASS-21 was used in this thesis in the interests of maximising returns from participants, who were required to complete a large number of scales for the concurrent validation exercise. To facilitate interpretation of the DASS-42, Lovibond & Lovibond (1995) classify scores from 0-78 as 'normal', 78–87 as 'mild', 87–95 as 'moderate', 95–98 as 'severe', and 98–100 as 'extremely severe'. To assess comparable score ranges on the DASS-21 used in this thesis, scores are multiplied by two (Crawford & Henry, 2003; Psychology Foundation of Australia, 2010). Alpha coefficient calculated for the scales based on the samples used in the concurrent validation study were satisfactory for both Sample 3 (New Zealand: Total DASS21: 0.925; Depression: 0.886; Anxiety: 0.828; Stress: 0.844) and Sample 4 (United Kingdom: Total DASS21: 0.869; Depression: 0.811; Anxiety: 0.707; Stress: 0.736). In view of previous research reporting links between depression, anxiety and avoidance coping (refer to Chapter 1), the DASS provides an appropriate index to include in

the concurrent validation of the GSAQ, although none of the participants in the two non-clinical samples used here obtained scores in the 'severe' or 'extremely severe' range, and relatively few fell into the 'moderate' range.

4.4.3 Coping Styles Questionnaire (revised version CSQ3)

The *Detached/Emotional* scale from the revised *Coping Styles Questionnaire* (CSQ - Roger, *et al*., 1993) was included in the questionnaire package for both Samples. The CSQ comprises rational, emotional, avoidance and detached coping scales, and was revised following confirmatory factor analyses which merged the emotional and detached scales into a single detached/emotional scale (Roger, 1996), with high scores indicating a detached perspective and low scores an emotional perspective. Although there is ongoing debate about whether three or four factors provide the best fit, the revised scale has been used successfully in a variety of research settings (for example, Borrill, Fox, & Roger, 2011; Costa & Pinto-Gouveia, 2011).

Detached coping describes the ability to maintain perspective during stressful situations (Roger, *et al*., 2011). Detached coping is considered an adaptive coping style and avoidance coping is regarded a maladaptive coping strategy (see for example Roger, *et al*., 1993), and it was expected that the detached/emotional scale of the CSQ would correlate negatively with the avoidance scales of the GSAQ. The alpha coefficients for the Detached/Emotional scale in this thesis were high for both samples (Sample 3: 0.909; Sample 4: 0.812).

4.4.4 Inhibition-Rumination Scale (I-RS)

Rumination is the habitual tendency to continue to ruminate about past or future emotional upset, and has been shown to prolong cardiovascular and adrenocortical recovery following exposure to laboratory and naturalistic stressors (for example, Roger & Jamieson, 1988; Roger & Najarian, 1989; Roger & Najarian, 1998; Thomsen, Mehlsen, Hokland, Viidik, Olesen, Avlund, Munk & Zachariae, 2004; Thomsen, Mehlsen, Olesen, Hokland, Viidik, Avlund & Zachariae, 2004). The earliest published rumination scale formed part of the Emotion Control

Questionnaire (ECQ – Roger & Nesshoever, 1987; ECQ2 - Roger & Najarian, 1989). The ECQ2 has been widely used by researchers and various studies have confirmed the important role of rumination in the stress response (see Roger, *et al*., 2011).

The ECQ2 was subsequently revised (see Roger, *et al*., 2011) in the light of research findings to yield a new 39-item Inhibition-Rumination Scale (I-RS - Roger, *et al*., 2011) comprising the two orthogonal dimensions of emotional rumination and emotional inhibition. The two indices have been shown to have significant implications for health and well-being, and detached coping has also been shown to correlate negatively with rumination (Borrill, Fox, Flynn & Roger, 2009; Roger, *et al*., 2011).

Only the 18-item dichotomous true-false rumination subscale was used in this thesis, based on previous findings indicating the role of rumination in the stress response as well as previously-reported correlations between rumination and avoidance coping (e.g., Roger, *et al*., 1993). The I-RS employs a dichotomised true/false response format, and the alpha coefficients for the Detached/Emotional scale were high for both samples in this study (Sample 3: 0.893; Sample 4: 0.796).

4.4.5 Physical Symptoms Inventory (PSI)

The Physical Symptoms Inventory (Spector & Jex, 1998) was developed to assess somatic symptoms associated with psychological distress. There are eighteen items, each assessing a separate condition, and for each one respondents are asked to say whether they have had no symptoms, had the symptom, or consulted a doctor for it, over the past 30 days. The total number of "have symptom" responses and the total number of "have seen doctor for it" responses are added so the total score for each of these scales ranges from 0-18. The total symptom score is the summed total of responses on these two scales together.

Various publications suggested a link between avoidance coping and physical health (e.g., Davies & Clark, 1998; Suls & Fletcher, 1985; Weinstein, *et al*., 2009),

and the PSI was included in the thesis to further explore this link. The PSI assesses distinct symptoms and also the severity of these symptoms, and since it is a causal indicator scale measuring conceptually different symptoms or indicators of physical health, coefficient alpha was deemed by the developers to be irrelevant (Spector & Jex, 1998).

4.5 Results

The results obtained indicated some expected and unexpected results and these will be discussed in this and the next section. A summary of the results is provided in Table 16 and Table 17 below.

Table 16: Sample 3 concurrent correlations (New Zealand sample; *N* = 147).

	GSAQ General Avoidance	GSAQ Emotional Avoidance	GSAQ Conflict Avoidance	GSAQ Total Avoidance
PCI Proactive Coping	-.560**	-.210*	-.577**	-.559**
DASS21 Depression	.339**	.052	.288**	.294**
DASS21 Anxiety	.278**	.170*	.217**	.280**
DASS21 Stress	.295**	.076	.269**	.272**
DASS21 Total	.349**	.112	.298**	.324**
CSQ3 Detached/Emotional	-.460**	-.006	-.364**	-.368**
I-RS Rumination	.395**	.075	.344**	.350**
PSI Have Symptom	.357**	.207*	.321**	.368**
PSI Doctor Symptom	-.174*	-.041	-.190*	-.169*
PSI Total	.271**	.185*	.229**	.285**

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table 17: Sample 4 concurrent correlations (United Kingdom sample; *N* = 172).

	GSAQ General Avoidance	GSAQ Emotional Avoidance	GSAQ Conflict Avoidance	GSAQ Total Avoidance
PCI Proactive Coping	-.460**	-.142	-.335**	-.432**
DASS21 Depression	.324**	-.028	.123	.229**
DASS21 Anxiety	.179*	-.068	.119	.123
DASS21 Stress	.128	-.039	.035	.077
DASS21 Total	.258**	-.053	.112	.175*
CSQ3 Detached/Emotional	-.321**	.072	-.231**	-.242**
I-RS Rumination	.322**	-.053	.149	.226**

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

4.5.1 Proactive Coping Inventory (PCI)

The correlation coefficients between Proactive Coping and GSAQ subscales were all low to moderate, negative and statistically significant apart from Emotional Avoidance in Sample 4 (United Kingdom), which was negative but not statistically significant. This was expected and in line with findings reported by for example Greenglass, *et al*. (1999). In Sample 3 (New Zealand) Total Avoidance (r = -0.559), Conflict Avoidance (r = -0.577) and General Avoidance (r = -0.560) correlated negatively and statistically significantly (p<.01) with Proactive Coping, while the correlation between Proactive Coping and Emotional Avoidance (r = -0.210; p<.05) was lower. Conflict Avoidance provided the strongest indication of common variance with Proactive Coping ($100r^2$ = 33.3%; p<.01). In Sample 4 Total Avoidance (r = -0.432), General Avoidance (r = -0.460) and Conflict Avoidance (r = -0.335) all significantly (p<.01) correlated with Proactive Coping, with General Avoidance indicating the highest level of common variance with Proactive Coping ($100r^2$ = 21.16%; p<.01) . Emotional Avoidance (r = -0.142; p>.05) did not correlate statistically significantly with Proactive Coping and not as strongly as in Sample 3, although all correlations reflected a similar negative trend across the two samples.

4.5.2 Depression Anxiety and Stress Scales (DASS21)

For Sample 3 (New Zealand), the correlations between General Avoidance, Conflict Avoidance, and Total Avoidance were all positive and significant at the 0.01 level for the DASS21 Total Scale, DASS21 Depression Scale, DASS21 Anxiety Scale and DASS21 Stress Scale, which had been anticipated from the review in Chapter 1. The results from Sample 3 showed that General Avoidance had the strongest correlations with all three of the DASS21 scales, followed by Conflict Avoidance, all significant at the 0.01 level. The correlation between DASS21 Depression and GSAQ General Avoidance (r = 0.339; $100r^2$ = 11.5%) was the strongest, followed by DASS21 Stress and General Avoidance (r = 0.295; $100r^2$ = 8.7%). Overall, the third highest correlation was between DASS21 Depression and Conflict Avoidance (r = 0.288; $100r^2$ = 8.29%). Correlations and variance estimates for Emotional Avoidance were particularly low with the only significant correlation (p<0.05) between Emotional Avoidance and DASS21 Anxiety (r = 0.170; $100r^2$= 2.9%), which suggests that Emotional Avoidance is potentially a poor indicator of variance in anxiety, and more-so with regards to depression (r = 0.052; $100r^2$= 0.27%) and stress (r = 0.076; $100r^2$= 0.58%).

Sample 4 (United Kingdom) results indicated a similar trend, with Emotional Avoidance exhibiting the lowest correlations with all the subscales of the DASS21 ranging between r = -0.068 to r = -0.028, including the DASS21 Total score. In contrast to the Emotional Avoidance findings for Sample 3, these correlations were also all negative, but since all of the correlations with Emotional Avoidance for both samples were small the difference in valence may not be of any significance. Conflict Avoidance also showed low correlations with regards to DASS21 Depression (r = 0.123), DASS21 Anxiety (r = 0.119) and DASS21 Stress (r = 0.035), with all of the correlations non-significant. General Avoidance (r = 0.324; $100r^2$ = 10.5%; p<.01) correlated the strongest with DASS21 Depression, followed by Total Avoidance (r = 0.229; $100r^2$ = 5.2%; p<.01). General Avoidance (r = 0.179; $100r^2$ = 3.2%; p<.05) showed the only significant correlation with DASS21 Anxiety as measured in Sample 4.

4.5.3 Coping Styles Questionnaire (revised version CSQ3)

It was expected that detached coping would correlate negatively with avoidance coping, which proved generally to be the case. In Sample 3 (New Zealand) the strongest correlation with the CSQ3 Detached Coping scale was General Avoidance (r = -0.460; $100r^2$ = 21.2%; p<.01) followed by Total Avoidance (r = -0.368; $100r^2$ = 13.5%; p<.01) and Conflict Avoidance (r = -0.364; $100r^2$ = 13.2%; p<.01). Interestingly, the relationship between Emotional Avoidance and Detached Coping was negligible (r = -0.006; $100r^2$ = 0.004%) and not statistically significant. The results of the analysis in Sample 4 (United Kingdom) followed a similar trend to the results reported for Sample 3, albeit yielding more modest correlations. General Avoidance (r = -0.321; $100r^2$ = 10.3%; p<.01) exhibited the strongest correlation with Detached Coping in Sample 4, followed by Total Avoidance (r = -0.242; $100r^2$ = 5.9%; p<.01) and Conflict Avoidance (r = -0.231; $100r^2$ = 5.3%; p<.01). The relationship between Emotional Avoidance and Detached Coping was also negligible in Sample 4 (r = 0.072; $100r^2$ = 0.025%; p>.05); although positive rather than negative as in Sample 3, the magnitude of the coefficient is so small that valence is probably irrelevant.

4.5.4 Inhibition-Rumination Scale (I-RS)

The previously-reported positive relationship between rumination and avoidance coping was confirmed in the current study (see for e.g., Chapter 1 of this thesis and Roger, *et al*., 1993). In Sample 3 (New Zealand) there were statistically significant positive associations between rumination and the overall Total GSAQ (r = 0.350; $100r^2$ = 12.25%; p<.01), General Avoidance (r = 0.385; $100r^2$ = 15.60%; p<.01) and Conflict Avoidance (r = 0.344; $100r^2$ = 11.83%; p<.01) scales. In Sample 4 (United Kingdom) General Avoidance (r = 0.322; $100r^2$ = 10.4%; p<.01) provided the strongest correlation for Rumination followed by Total Avoidance (r = 0.226; $100r^2$ = 5.1%; p<.01). Conflict Avoidance (r = 0.149; $100r^2$ = 2.2%; p>.05) indicated a lower and non-significant relationship with Rumination in Sample 4. Interestingly, Emotional Avoidance had a negligible and non-significant positive relationship with Rumination in Sample 3 (r = 0.075; $100r^2$ = 0.56%; p>.05) and

negligible non-significant negative correlation with Rumination in Sample 4 (r = -0.053; $100r^2$ = 0.003%; p>.05). Again, the difference in valence in the two correlations is probably not significant in view of the negligible magnitudes.

4.5.5 Physical Symptoms Inventory (PSI)

The two PSI measures – reporting no physical symptoms and total physical symptoms reported (i.e., having symptoms and reporting symptoms to a doctor added together) were correlated with the GSAQ scales, and Total Avoidance (r = 0.285; $100r^2$ = 8.1%), General Avoidance (r = 0.271; $100r^2$ = 7.3%) and Conflict Avoidance (r = 0.229; $100r^2$ = 5.2%) all correlated positively with "total symptoms reported" (all p<.01), and similarly but negatively with "reporting no symptoms". Emotional Avoidance (r = -0.185; $100r^2$ = 3.4%) also correlated negatively with "reporting no symptoms" and positively with "total symptoms reported", but less significantly (both p<.05). Overall the highest correlation between the GSAQ scales and PSI "having physical symptoms" associated with psychological distress scale was Total Avoidance (r = 0.368; $100r^2$ = 13.5%; p<.01), followed by General Avoidance (r = 0.357; $100r^2$ = 12.7%) and Conflict Avoidance (r = 0.321; $100r^2$ = 10.3%) all significant at the p<0.01 level. Emotional Avoidance did not correlate significantly with "reporting symptoms to a doctor" but indicated a statistically significant positive relationship with "having physical symptoms" (r = 0.207; $100r^2$ = 4.3%; p<.05). Interestingly, all of the GSAQ avoidance scales indicated a negative relationship with "reporting symptoms to a doctor", with Conflict Avoidance (r = -0.190; $100r^2$ = 3.6%) having the strongest correlation, followed by General Avoidance (r = -0.174; $100r^2$ = 3.0%) and Total Avoidance (r = -0.169; $100r^2$ = 2.9%), all significant at p<.05.

Although not indicated in the summary, Table 16, none of the other concurrent scales correlated negatively with "reporting symptoms to a doctor" apart from DASS21 Depression (r = -.007) and IR-S rumination (r = -.047). Proactive coping (r = .131) correlated the strongest of all concurrent scales with "reporting symptoms to doctor". However, none of these correlations were statistically significant (refer to Appendix 10: Concurrent Correlation Table for Sample 3: New

Zealand working adults). As indicated earlier, participants from Sample 4 (United Kingdom) did not complete the PSI, which was replaced by the Deliberate Self-Harm Inventory (DSHI - Gratz, 2001) for the analysis reported in Chapter 6: Avoidance Coping and Deliberate Self-Harm. Thus, no results are reported for Sample 4 in terms of the relationship between Physical Symptoms associated with psychological distress and Avoidance Coping (Please refer to Chapter 6 for the analysis of Deliberate Self-Harm and Avoidance Coping).

4.5.6 A Brief Summary of Other Concurrent Scale Correlations

This section briefly summarises the other noteworthy correlations between the convergent and divergent coping scales and psychological and physiological health measures used in this thesis.

The PCI Proactive Coping Scale correlations with the DASS21 Depression (r = -0.465), DASS21 Anxiety (r = -0.290), DASS21 Stress (r = -0.308) and PSI Have Physical Symptoms (r = -0.255) were all negative and statistically significant at the p<.01 level. The CSQ3 Detached Coping Scale yielded moderately strong statistically significant (p<.01) negative correlations with DASS Depression (r = -0.637), DASS21 Anxiety (r = -0.414), DASS21 Stress (r = -0.591), and PSI Have Physical Symptoms (r -0.448) associated with psychological distress. Considering that both Proactive Coping and Detached Coping are adaptive coping strategies, it is not surprising that the correlations between these two scales are in an opposite direction to the correlations of the GSAQ Avoidance Scales with the measures of psychological and physical health.

As mentioned before, rumination is also considered a maladaptive response, as is avoidance coping, thus it was expected that the I-RS Rumination scale will correlate positively with the measures of psychological and physical health. This was, indeed the case, with Rumination showing statistically significant (p<.01) correlations with the DASS21 Depression (r = 0.591), DASS21 Anxiety (r = 0.466), DASS Stress (r = 0.527) and PSI Have Physical Symptoms (r = 0.437) associated with psychological distress scales.

4.6 Supplementary Analysis of Avoidance Coping and its Relationship with Depression, Anxiety, Stress and Physical Symptoms.

The present chapter indicated relationships between the GSAQ scales and DASS21 Depression, Anxiety and Stress, as well as with the PSI Physical Symptoms associated with psychological distress. Concurrent validation relies on correlations, and in the interests of exploring the differences between high and low avoiders on the GSAQ scales in reported depression, anxiety, stress and physical symptoms, this section of the chapter will report briefly on comparisons between the two groups using analysis of variance (ANOVA). The ANOVA design was either 3-way or 4-way, depending on the GSAQ scale involved (see below).

A substantial number of analyses were carried out to test for the effects of avoidance on depression, anxiety, stress and physical symptoms, but the findings are compromised by the difficulty in selecting large enough samples from non-clinical populations, where the score distributions are truncated. In the interest of brevity only significant findings are mentioned here. To provide a degree of replication the effects were tested separately in Samples 3 (New Zealand working adults) and 4 (United Kingdom university students). Both samples completed the DASS21, but Sample 4 participants did not complete the PSI.

Because the two samples were drawn from non-clinical populations there were comparatively more low avoiders than high avoiders. To provide more even sample sizes for the analyses, the high avoiders (the top third highest scores on the GSAQ scales) were compared with subsamples derived from the larger proportion of low avoiders (approximately the bottom third of low scorers on the GSAQ). The subsamples were derived by random allocation to three low-avoider subsamples for General Avoidance and Conflict Avoidance, and two subsamples for Emotional Avoidance (based on the ratio of high versus low avoiders in each GSAQ scale). The high and low subsamples were not all equal in size, and thus post-hoc analysis will report more conservative Bonferroni, Sheffe post-hoc results and Dunnett's C, assuming unequal variances.

In Samples 3 and 4 the high-avoider subsamples obtained statistically significantly higher ($p < 0.001$) scores on General Avoidance, Emotional Avoidance and Conflict Avoidance than the low-avoider subsamples, and Bonferroni ($p < 0.001$), Sheffe ($p < 0.001$) and Dunnett's C (set to $p < 0.05$) post-hoc tests confirmed these results in all instances. A prerequisite for comparing randomly-assigned low-avoider subsamples was that these groups should not differ statistically from one another on the GSAQ scales, and that was indeed the case.

4.6.1 GSAQ General Avoidance

ANOVA results indicated no statistically significant differences between the high-avoider and low-avoider subsamples for depression, anxiety or stress in Sample 3 (New Zealand), and although ANOVA indicated that there was a difference for physical symptoms between the groups, post-hoc analysis indicated ambiguous results with a difference between only one low avoider group and the high avoiders (Bonferroni: $p < 0.05$; Sheffe: $p = 0.058$, Dunnett's C $p > 0.05$). In Sample 4 (United Kingdom) there was a significant difference in depression scores between high and low avoiders, but only between one of the three low avoider groups and the high avoider group (Bonferroni: $p < 0.01$; Sheffe: $p < 0.01$, Dunnett's C $p < 0.05$).

4.6.2 GSAQ Emotional Avoidance

In Sample 3 no differences were reported for depression, anxiety, stress or physical symptoms between high and low avoiders. Sample 4 data replicated the results obtained in Sample 3, and indicated no statistically significant differences between high and low avoiders for depression, anxiety or stress.

4.6.3 GSAQ Conflict Avoidance

Significant differences between high and low conflict avoiders were found for depression ($p < 0.01$), physical symptoms ($p < 0.01$) and stress ($p < 0.05$), but not for anxiety in Sample 3 (New Zealand). Post-hoc analysis indicated that there were

differences in reported depression between the high avoider group and two of the three low avoider groups (Bonferroni: $p < 0.05$; Sheffe: $p < 0.05$; Dunnett's C: $p < 0.05$). This was not the case for stress, with post-hoc Bonferroni correction only approaching statistical significance in one comparison, and no effects for either Sheffe or Dunnett's C. Statistically significant physical symptoms differences were found between one low avoider group and high avoiders (Bonferroni: $p < 0.05$; Sheffe: $p < 0.05$; Dunnett's C: $p < 0.05$). In Sample 4 (United Kingdom) there were no statistically significant differences between high and low conflict avoiders for depression, anxiety or stress, and as stated, Sample 4 did not complete the Physical Symptoms Inventory.

4.7 Discussion and Conclusions

This chapter assessed the concurrent validity of the GSAQ by exploring the relationships between the GSAQ factors and selected divergent as well as convergent scales. Overall the results were as expected, although the Emotional Avoidance scale consistently showed low to zero-order correlations with the concurrent scales used in this study. Using two different English-speaking samples allowed for limited replication of the findings across differing age-groups (namely working adults and university students), and apart from small differences in the magnitude of the correlations or level of statistical significance the findings were comparable for the two samples. For ease of analysis the discussion below will briefly outline the findings for each concurrent scale separately, with a short summary. This will be followed by a short section discussing the differences between high and low avoiders in terms of psychophysiological health across the two samples.

4.7.1 PCI Proactive Coping

In both samples Proactive Coping correlated negatively with all the GSAQ scales. General Avoidance had the strongest correlation with Proactive Coping in both samples, followed by Conflict Avoidance. Although the relationship between Emotional Avoidance and Proactive Coping was significant in Sample 3 (New

Zealand sample) and not in Sample 4 (United Kingdom sample), the percentage variance estimate in both instances was negligible. The relationship between the GSAQ scales and Proactive Coping were all stronger in Sample 3 compared to Sample 4. The low correlations between Proactive Coping and Emotional Avoidance could indicate the potential duality of avoidance coping, i.e. that it is beneficial in the short-term but deleterious in the longer term. Speculatively, emotional avoidance might thus offer temporary relief from demanding events in the short term, and may even appear to be proactive for some people under certain circumstances. This seems a reasonable conclusion from the findings in the light of the samples used in this thesis being drawn from non-clinical environments, although it was not explicitly assessed in this thesis and would require a longitudinal research design to be adequately tested.

4.7.2 DASS21 Depression

Depression correlated most strongly with General Avoidance in both samples, and the coefficient of determination indicated a similar relationship in both samples. The second-strongest correlation with DASS Depression was Total Avoidance in both samples, but the relationship was stronger in Sample 3 (New Zealand working adults). Conflict Avoidance did not indicate a significant relationship with DASS Depression in Sample 4 (university students in the United Kingdom), but the correlation in Sample 3, although significant, was low. In both samples the relationship between Emotional Avoidance and DASS Depression was negligible. The GSAQ scale relationships with Depression generally followed expected patterns apart from Emotional Avoidance, and the results for Emotional Avoidance were replicated in both samples. As discussed in 4.7.1 above, the same applied here for Emotional Avoidance. Alternatively it could also indicate that Emotional Avoidance is not a factor in depression for all people.

4.7.3 DASS21 Anxiety

The correlations between DASS Anxiety and the individual GSAQ scales were similar in the two samples, although all the correlations were statistically significant

in Sample 3 (New Zealand working adults), while in Sample 4 (United Kingdom university students) only the correlation with General Avoidance was significant. While Avoidance Coping had been expected to correlate with DASS21 Anxiety, the overall coefficient of determination in both samples was less than eight percent, suggesting that avoidance coping may be a poor indicator of anxiety, at least in non-clinical samples. The difference in correlation magnitudes between Sample 3 and Sample 4 might be attributable to the younger age of the participants in the latter sample, or perhaps younger adults use less avoidance coping because they have lower anxiety levels. The effect could also be cultural, since the samples were derived from different countries.

4.7.4 DASS21 Stress

The correlations between the Stress scale and the GSAQ showed similar trends in both samples; although the correlations in Sample 4 (United Kingdom university students) were much lower than in Sample 3 (New Zealand working adults) and all of the coefficients in Sample 4 were non-significant. In Sample 3 the strongest correlation with DASS21 Stress was General Avoidance followed by Total Avoidance and Conflict Avoidance, respectively. Based on the coefficient of determination, none of the GSAQ scales predicted more than nine percent of the shared variance with reported stress scores. As before in assessing the anxiety scores, the difference in correlation magnitudes found between Sample 3 and Sample 4 might be because the latter sample is much younger and the effect of long-term avoidance has not yet impacted on perceived stress – previous reports have noted that avoidance could be beneficial in the short term, but that it could have effects on psychological and physical health in the long term (see for example Davies & Clark, 1998; Suls & Fletcher, 1985). Stress also appears to have an additive effect (Robbins, Odendaal & Roodt, 2004), which might also account for the differences between students and the working adults samples.

4.7.5 CSQ3 Detached/Emotional Coping Style

Based primarily on the view that detached coping is adaptive and avoidance is maladaptive (see for example Roger, *et al*., 1993) it was expected that the CSQ3 Detached/Emotional coping scale would correlate negatively with the GSAQ scales, and the statistically significant inverse correlations between the Detached Coping scale and the majority of the GSAQ subscales was not surprising. Apart from Emotional Avoidance all the correlations were significant, and although modest, the pattern of correlations followed a similar trend in both samples, with the strongest correlation with Detached Coping being General Avoidance, followed by Total Avoidance and Conflict Avoidance. The correlation between Emotional Avoidance and Detached Coping was negligible in both samples, and again, as mentioned before, this could indicate the duality of the avoidance coping having potential benefits in the short-term while being deleterious in the longer term.

4.7.6 I-RS Ruminative Emotional Control

Rumination is a maladaptive emotional response, and in view of the significant inverse relationship between Rumination and Detached Coping (for example Roger, *et al*., 1993), a positive correlation with the GSAQ scales was expected and confirmed by the findings. The pattern of correlations again replicated across the two samples, with General Avoidance indicating the strongest correlation with Rumination, followed by Total Avoidance and Conflict Avoidance. The correlations between Emotional Avoidance and rumination were negligible in both samples. Interestingly the correlation between rumination and Conflict Avoidance was not significant in Sample 4 (United Kingdom university students). Considering the discussion in Chapter 1: Introduction and Literature Review, indicating that avoidance coping may result from individuals perceiving a situation as too challenging to deal with based on their available coping resources, one could speculate that conflict situations with others might be perceived as more upsetting for participants from Sample 3 (New Zealand working adults), or that the more mature working adults in Sample 3 tend to avoid conflict situations because they have had more experience in dealing with them.

Similar to the findings in the correlation results between the GSAQ and Detached Coping, the GSAQ scales appear to be better predictors of variance in rumination in the older Sample 3 (New Zealand) participants than the younger participants in Sample 4 (United Kingdom). As reported in this study (see Appendix 10: Concurrent Correlation Table for Sample 3: New Zealand working adults and Appendix 11: Concurrent Correlation Table for Sample 4: United Kingdom university students) previous research also linked rumination to psychological health and physical health (for example, Borrill, *et al*., 2009; Roger, *et al*., 2011).

4.7.7 PSI Physical Symptoms Associated with Psychological Distress

While avoidance coping could be beneficial in the short term, sustained avoidance strategies are likely to impact on psychological and physical health (see for example Davies & Clark, 1998; Steiner, Erickson, Hernandez, & Pavelski, 2002; Suls & Fletcher, 1985; Weinstein, *et al*., 2009). The results from the correlations between the GSAQ and Physical Symptoms Inventory offer some confirmation for this, with statistically significant relationships between avoidance and reporting having physical symptoms associated with psychological distress, but statistically negative relationships with reporting symptoms to a doctor. This finding appears consistent with the construct of avoidance coping. For example, having symptoms but avoiding their disclosure. Interestingly the effect was significant for General Avoidance and Conflict Avoidance but not for Emotional Avoidance. This could reflect the potentially anxiety-provoking nature of medical consultations and the psychological distress that might follow from an unfavourable diagnosis. Furthermore, the correlation results in this study may indicate that a refusal or reluctance to report the symptoms associated with psychological distress to a doctor could potentially lead to more serious health outcomes if left untreated.

4.7.8 High and Low Avoiders Summary

Although few statistically significant differences were found, it is important to note that these samples were drawn from two non-clinical settings. Emotional

Avoidance in particular yielded no differences between high and low avoiders, although high emotional avoiders tended to report higher levels of depression, anxiety and stress than low emotional avoiders. General Avoidance and Conflict Avoidance indicated some statistically significant differences between high and low avoiders in relation to depression, stress and physical symptoms, but not for anxiety. The results of this analysis may be different when comparing results for clinical and non-clinical samples, and although this was beyond the scope of this thesis it does indicate a potentially fruitful avenue for future research with the GSAQ.

Despite the limited statistically significant results, high avoiders have, overall, reported higher levels of depression, anxiety, stress and physical symptoms associated with psychological distress across the subsamples within Samples 3 and 4, which offers some support for claims that avoidance coping is implicated in psychological and physical health. Interestingly, high avoiders have in all instances reported fewer symptoms to a doctor, and although not statistically significant, this trend across the samples supports the view that avoidance coping could lead to adverse health effects in the longer term as a consequence of not reporting potentially harmful symptoms to a doctor. If this is the case, this finding would also support the view that while avoidance coping might reduce distress in the short term, it may have a significant impact on wellbeing in the longer term (Davies and Clark, 1998; Steiner, *et al*., 2002; Suls and Fletcher, 1985; Weinstein, *et al*., 2009).

4.7.9 Summary

In summary, although there were subtle differences in the results between the two samples used in the concurrent validation of the GSAQ, the pattern of correlations followed expected trends and generally confirmed findings reported in the literature (for example Friedman, *et al*., 1992; Ottenbreit & Dobson, 2004; Oxlad, *et al*., 2004). However, not all forms of avoidance predicted health outcomes within the samples tested, with non-significant and in many cases negligible correlations between Emotional Avoidance and most of the concurrent constructs.

It is important to bear in mind that the study only used self-reported assessments in two non-clinical samples. The magnitude of avoidance and other clinical measures such as the Depression and Anxiety Stress Scales (DASS) fell mostly within the lower normal range, and the outcomes might be very different using clinical samples. The inclusion of clinical samples was beyond the scope of this thesis, but this offers a clear direction for future research with the GSAQ.

Chapter 5: Spanish Translation and Cross-Cultural Study of the GSAQ[6]

5.1 Introduction

The main purpose of this thesis is to describe the development of a multidimensional avoidance coping questionnaire and to explore its implications for psychological health in non-clinical samples. However, cultural and societal differences could significantly affect the nature and structure of the coping process (Aguilar-Vafaie & Abiari, 2007), and a number of authors have argued that coping research has not sufficiently captured cultural differences (e.g., Dunahoo, *et al*., 1998; Kuo, *et al*., 2006; Monnier, *et al*., 1998).

Despite the diverse nature of the various samples used during the development of the GSAQ, most participants were from predominantly English-speaking countries in Europe, Oceania, Africa and the Americas. The GSAQ was developed primarily with English-speaking samples in mind, and the purpose of this chapter is to describe the development of a version of the GSAQ translated into Spanish and to compare the scale in samples from two English-speaking and two Spanish-speaking samples. Rather than relying on simple contrasts between the original and translated versions, the Spanish version was first factor analysed to provide factorial rather than just mean-score comparisons. The literature explored below reported cross-cultural comparisons using other coping scales, and the findings have indicated cultural differences in both mean-score comparisons as well as differences in obtained factor structures. Relying on sample mean-score comparisons alone is inevitably biased by different interpretations of the constructs being measured, and this chapter is therefore focused primarily on cross-cultural comparisons between factor structures rather than mean scores. Since the analyses are based on a new scale and are exploratory, generating specific hypotheses would not be appropriate. However, in the light of the earlier research it was broadly hypothesised that the samples used for comparison in this Chapter would yield differential factor structures, and where these differences do occur they will be

[6] The main findings of chapters 1, 2, 3, 4, and 5 were presented as a paper at the 33rd International Conference of the Stress and Anxiety Research Society (STAR), Palma de Mallorca, Spain (2 – 4 to July 2012).

explained with reference to views expressed by research colleagues working within those cultures.

Other coping scales have been translated into various languages, and in many cases have exhibited differential factor structures (see for example: CRI-A: Aguilar-Vafaie & Abiari, 2007; ECQ: Roger, *et al*., 2001; COPE: Sica, *et al*., 1997). In fact, such is the potential role of culture that sample source and sample ethnicity predicted scale reliability in a study testing the generalisation of the Ways of Coping Scale (Rexrode, Petersen & O'Toole, 2008). Roger, *et al*. (2001) found differential factor loadings on the Emotion Control Questionnaire (ECQ) for English, Korean and Spanish samples, especially between the Korean and English and between the Korean and Spanish samples, and confirmatory factor analysis indicated a two-factor solution to be optimal across the three samples rather than the original four-factor solution for the scale.

In a study describing the development of an Italian version of the COPE, reliability estimates were similar to those that had been obtained using American-based samples (Sica, *et al*., 1997). Test-retest results were also similar between the American and Italian samples, but a rotated factor solution extracted 13 factors instead of the original 15 factors. The authors commented that the structure seemed similar, but not equal, to the original structure, although closer inspection of sub-scales which showed poor reliability in the Italian version indicated that some items were poorly formulated when compared to the meaning of the items in the original American version. The authors concluded that the factor structure would be difficult to replicate across cultures owing to the complexity of the COPE, but that the original factor structure was nonetheless not completely supported by the data obtained (Sica, *et al*., 1997).

The COPE study highlights the importance of obtaining an accurate translation of the original scale, and the current study employed a particularly rigorous translation/back-translation methodology. As mentioned, the main purpose of this chapter is to analyse cultural differences and similarities in the underlying factor structure of the GSAQ using Exploratory Factor Analysis (EFA), but also to

establish whether the fit of the original three-factor structure of the GSAQ will replicate in the two Spanish samples using Confirmatory Factor Analysis (CFA). Only a brief description of the subsidiary cross-cultural sample mean difference analysis, reliability analysis, and factor correlations will be included.

In addition to exploring the fit of the factor structure of the original GSAQ within a working adult and a student sample from non-English-speaking countries, the study also provided substantially larger sample sizes to assess the model fit than those included in the English-speaking CFA samples. As this chapter will show, the CFA results for the Spanish samples indicated relatively strong support for the previously-obtained three-factor GSAQ solution, but the factors differed quite significantly in some cases between cultures. The results of both the item and parcel-based CFA also suggest that a two-factor structure (Factor 1: General Avoidance and Factor 3: Conflict Avoidance combined; Factor 2: Emotional Avoidance separate) may provide an acceptable solution.

5.2 Methodology

5.2.1 Translation into Spanish

Following the methodology described in Roger, *et al*. (2001) when translating the Emotion Control Questionnaire (ECQ) from English into Spanish, the original 43-item English version of the GSAQ was first translated into Spanish by bilingual researchers with extensive experience in this kind of work. The Spanish version was then back-translated into English, and the new English version compared to the original English version for item accuracy. Discrepancies between the English versions were resolved, and the Spanish version amended accordingly to produce a final form of the Spanish version of the GSAQ.

5.2.2 Research Participants

The two samples[7] included in this chapter are labelled Sample 5 (Balearic Islands university students) and Sample 6 (Canary Islands working adults). Sample 3 (New Zealand) and 4 (United Kingdom) were described in Chapter 3: Confirmatory Factor Analysis.

5.2.2.1 Sample 5: Balearic Islands university students

Participants in Sample 5 were 372 students from a wide variety of academic disciplines attending the University of the Balearic Islands, Palma de Mallorca, Spain, who were all invited to complete the translated GSAQ. After taking account of missing data, 342 participants provided usable responses for the study. The mean age for the sample was 22.64 years (*SD* = 4.08), ranging between 18 – 43 years. The majority of participants were female (*n* = 230) ranging between 18 – 43 years (*M* = 22.41; *SD* = 4.06). Males (*n* = 112) were aged 18 – 43 years (*M* = 23.12; *SD* = 4.12), and seventeen participants did not indicate their age.

5.2.2.2 Sample 6: Canary Islands working adults

Of the 395 participants in Sample 6 who completed the Spanish version of the translated GSAQ, 309 provided complete and usable responses. There were 193 females and 115 males in the sample, though one person did not indicate their gender. The mean age of the sample was 26.87 years (*SD* = 8.96), ranging between 18 – 67 years. Males were aged 18 – 67 years (*M* = 27.27; *SD* = 10.06) and females aged between 18 and 62 years (*M* = 26.63; *SD* = 8.23). Nine participants did not indicate their age. The majority of the sample was drawn from the working population of the Canary Islands.

[7] The data for the Spanish-speaking samples were collected with the generous assistance of Prof. Gloria de la Banda at the University of the Balearic Islands, Palma de Mallorca and her team, who also assisted with the translation of the GSAQ into Spanish, and Prof. Pilar M Matud from the Universidad de La Laguna, Tenerife, in the Canary Islands.

5.2.3 Procedure

The translated version of the 43-item GSAQ was made available to the students at the University of the Balearic Islands in Spain (Sample 5) and the working adults from the Canary Islands (Sample 6) through the networks of two research collaborators who participated in this project (see footnote 7 above, on page 92). Participation was voluntary, and neither sample received any inducement to participate.

Coefficient alpha and factor correlations were determined for the samples to assess the internal consistency and descriptive nature of the three-factor 43-item GSAQ in these samples. The item and parcel-based CFA methodology was discussed in detail in Chapter 3: Confirmatory Factor Analysis, and need not be repeated here. The CFA results obtained using the two English speaking samples from New Zealand (Sample 3) and the United Kingdom (Sample 4) suggested that the three-factor structure provides the superior fit. In this section the results of the EFA and CFA for the Spanish samples (Samples 5 and 6) will be reported and compared with the results from the English speaking samples (Samples 3 and 4). For all the analyses items were first recoded using SPSS v20 syntax, so that all factor loadings are shown as positive and AMOS v20 software was used for confirmatory factor analysis of the scale in the Spanish samples.

5.3 Internal Consistency and Factor Correlations based on the original GSAQ structure

5.3.1 Internal Consistency of the 43-item GSAQ across all four samples

Overall the internal consistency of the 43-item GSAQ was very good in all of the four samples. The alpha coefficients given below are based on the original GSAQ structure obtained with the English-speaking samples. Alpha coefficients ranged between 0.87 and 0.93 for the Total GSAQ, 0.82 to 0.90 for General Avoidance and 0.72 to 0.83 for Emotional Avoidance, with slightly lower coefficients for Conflict Avoidance (0.65 to 0.84).

Table 18: Summary of Internal Consistencies based on the original GSAQ structure

	Sample 3 (NZ)	Sample 4 (UK)	Sample 5 (BI)	Sample 6 (CI)
GSAQ_Total	0.93	0.89	0.87	0.91
General Avoidance	0.90	0.86	0.82	0.88
Emotional Avoidance	0.83	0.72	0.80	0.83
Conflict Avoidance	0.84	0.74	0.65	0.76

English GSAQ - NZ: New Zealand working adults; UK: United Kingdom university students
Spanish GSAQ - BI: Balearic Islands university students; CI: Canary Islands working adults

5.3.2 Factor Correlations of the 43-item GSAQ across the samples

Factor correlations for the Spanish-speaking samples echoed those for the English-speaking samples and were generally modest, indicating that the factors assess relatively independent aspects of avoidance coping. The factor correlations given below are again based on the original GSAQ structure obtained in the English-speaking samples.

Table 19: Summary of factor correlations based on the original GSAQ structure

		Sample 3 (NZ)	Sample 4 (UK)	Sample 5 (BI)	Sample 6 (CI)
GSAQ Total	GSAQ_F1	0.925	0.931	0.886	0.915
	GSAQ_F2	0.684	0.627	0.694	0.643
	GSAQ_F3	0.820	0.728	0.714	0.811
GSAQ_F1	GSAQ_F2	0.426	0.385	0.355	0.330
	GSAQ_F3	0.728	0.618	0.585	0.758
GSAQ_F2	GSAQ_F3	0.332	0.174	0.239	0.254

GSAQ_Total: Total Avoidance; GSAQ_F1: General Avoidance;
GSAQ_F2: Emotional Avoidance; GSAQ_F3: Conflict Avoidance
English GSAQ - NZ: New Zealand working adults; UK: United Kingdom university students
Spanish GSAQ - BI: Balearic Islands university students; CI: Canary Islands working adults

5.4 Exploratory Factor Analysis for 43-item GSAQ across the samples

Principal Axis Factoring (PAF) was run on the data using 0.30 as the exclusion criterion with Orthogonal (Varimax) rotation. Replicating factor structures across cultures and even within samples from similar cultures has been extremely challenging in similar reported studies (for example Aguilar-Vafaie & Abiari, 2007; Connor-Smith & Calvette, 2004), and a less rigorous extraction criterion was therefore used in this study compared to the 0.35 criterion reported for the EFA in Chapter 2 (see for example Roger, *et al*., 2001 for a cross-cultural factor analysis using a 0.30 criterion). The Kaiser-Meyer-Olkin (KMO - *Sample 3, New Zealand*: 0.854. *Sample 4, UK*: 0.805. *Sample 5, Balearic Islands*: 0.848. *Sample 6, Canary Islands*: 0.894) measure of sampling adequacy and Bartlett's Test of Sphericity ($p < 0.001$) indicated that the data were factorable for all samples (Brace, *et al*., 2006), and the Scree plots indicated a three-factor solution for the samples. A broad comparison of the factors across the four samples indicated that the items on Factor 2 (GSAQ_F2 – Emotional Avoidance) remained relatively stable across the samples, but some Factor 1 (GSAQ_F1 – General Avoidance) and Factor 3 (GSAQ_F3 – Conflict Avoidance) items migrated and cross-loaded differentially across samples.

The EFA results for the two Spanish samples are summarised in Table 20 and a brief overview, followed by a comparison with the EFA results for the New Zealand (Sample 3) and United Kingdom (Sample 4) samples. Exploratory factor analysis gives an indication of the structure of a scale and the items that load on each factor, and Section 5.4.3 provides a clear summary of the similarities and differences in the 'flavour' of the factors obtained from the different samples by exploring the highest-loading items on each factor across samples.

Confirmatory factor analysis uses best-fit indices to test the adequacy of the obtained structure. The CFA results for the Spanish-speaking samples are presented in Section 5.5, together with a brief comparison with the CFA results for the New Zealand (Sample 3) and United Kingdom (Sample 4) samples.

Table 20 shows the different factor loadings in the four cultural samples based on the original GSAQ structure. Where an item loaded higher on a different factor in relation to the original GSAQ structure, the new factor is indicated in parentheses, and the item loadings given in Table 20 correspond with the actual factor an item loaded on. Sections 5.4.1 and 5.4.2 below briefly discuss the EFA results for the two Spanish samples, and a more detailed description of the loading patterns is provided in Appendix 12: Extended description of the factor loadings referred to in Table 20 and sections 5.4.1 and 5.4.2.

Table 20: Loadings for the 43-item GSAQ in the different four cultural samples

(This table is based on the original factor structure. Where an item loaded higher on a different factor, the new factor is indicated in parenthesis. Item loadings correspond with the factor an item loaded on).

		Item Loading			
Original Factor Structure	**Item**	**Sample 3 (NZ)**	**Sample 4 (UK)**	**Sample 5 (BI)**	**Sample 6 (CI)**
General Avoidance (F1)	GSAQ1_F1	0.379	0.374 (F3)	0.522 (F2)	0.534 (F2)
	GSAQ4_F1	0.575	0.377	0.415 (F3)	0.596
	GSAQ5_F1	0.634	0.592	0.337	0.657
	GSAQ6_F1	0.558	0.515	0.417 (F3)	0.515
	GSAQ7_F1	-	0.393	0.327 (F3)	-
	GSAQ9_F1	-	0.393 (F3)	-	-
	GSAQ10_F1	0.421	0.303	-	0.361
	GSAQ11_F1	0.343	-	0.408	0.603
	GSAQ12_F1	0.306 (F3)	0.379 (F3)	0.396	0.381
	GSAQ13_F1	0.497	0.515 (F3)	0.377	0.436
	GSAQ17_F1	0.328	-	-	-
	GSAQ22_F1	0.474 (F3)	0.497 (F3)	0.505	0.469 (F3)
	GSAQ24_F1	0.600 (F3)	0.485 (F3)	0.599	0.405 (F3)
	GSAQ25_F1	0.469	0.459	0.461 (F3)	0.580
	GSAQ29_F1	0.694	0.538	0.537 (F3)	0.586
	GSAQ30_F1	0.491	0.444 (F3)	0.351 (F3)	0.489
	GSAQ33_F1	0.497 (F3)	0.580	0.398 (F3)	0.612
	GSAQ37_F1	0.436	0.489 (F3)	-	0.340 (F3)
	GSAQ38_F1	0.447 (F3)	0.460 (F3)	-	0.488
	GSAQ39_F1	0.650	0.554	0.463 (F3)	0.645
	GSAQ40_F1	0.414	0.388	0.519	0.461
	GSAQ41_F1	0.513	0.591 (F3)	0.571	0.535 (F3)

Original Factor Structure	Item	Item Loading			
		Sample 3 (NZ)	Sample 4 (UK)	Sample 5 (BI)	Sample 6 (CI)
	GSAQ42_F1	0.518	0.475	0.409	0.533
Emotional Avoidance (F2)	GSAQ2_F2	0.577	-	0.585	0.707
	GSAQ3_F2	0.621	-	0.531	0.647
	GSAQ14_F2	0.493	0.435	0.536	0.623
	GSAQ16_F2	0.500	0.418	0.449	0.436
	GSAQ18_F2	0.581	0.564	0.543	0.516
	GSAQ20_F2	0.648	0.500	0.548	0.576
	GSAQ23_F2	0.482 (F3)	0.431	0.385	0.394 (F3)
	GSAQ31_F2	0.625	0.402	0.563	0.622
	GSAQ35_F2	0.646	0.585	0.582	0.622
	GSAQ36_F2	0.395	0.375	0.426	0.459
	GSAQ43_F2	0.447	0.381 (F3)	0.433	0.414
Conflict Avoidance (F3)	GSAQ8_F3	0.485 (F1)	-	-	-
	GSAQ15_F3	0.604 (F1)	0.536 (F1)	0.482	0.532 (F1)
	GSAQ19_F3	0.351	-	-	-
	GSAQ21_F3	0.539 (F1)	0.544 (F1)	0.450	0.630 (F1)
	GSAQ26_F3	0.450	0.480 (F1)	0.360	0.445 (F1)
	GSAQ27_F3	0.492	0.342	-	0.384
	GSAQ28_F3	0.538 (F1)	0.528 (F1)	0.562	0.467 (F1)
	GSAQ32_F3	0.627 (F1)	0.487 (F1)	0.338	0.439 (F1)
	GSAQ34_F3	0.562 (F1)	0.522	0.638 (F1)	0.558 (F1)

GSAQ English: NZ - New Zealand working adults; UK - United Kingdom university students

GSAQ Spanish: BI - Balearic Islands university students; CI: Canary Islands working adults

Item naming: E.g. GSAQ32_F3 is GSAQ item 23 and originally loaded on Factor 3

5.4.1 Sample 5 – Balearic Islands student sample (Spanish)

Overall, Emotional Avoidance remained stable in Sample 5, but Conflict Avoidance changed moderately with the addition of a few items from the original General Avoidance factor. General Avoidance changed considerably, with the addition of one item from the original Conflict Avoidance factor and the loss of more than half (14 items) of its original items either due to no loadings (5 items) or the majority (8 items) of items loading on the third factor. Section 5.4.3 below provides more detail about the differences found between the four cultures.

5.4.2 Sample 6 – Canary Islands working adults sample (Spanish)

Emotional Avoidance remained very stable in this sample with only one item migrating to the new third factor. The original General Avoidance factor also remained fairly stable, with the addition of six items from the original Conflict Avoidance factor, one item migrating to the second factor, four items loading on the new third factor and three items not loading on any factors. Only one item from the original Conflict Avoidance factor remained on the third factor, while the majority of the Conflict Avoidance items were absorbed into in the first factor. The next section will discuss the factorial differences between the four samples.

5.4.3 Comparison of the original GSAQ factor loading patterns in Spanish and English speaking samples

Overall there were clearly some significant differences between the samples. This section will examine the differences in more detail by comparing items and item loadings on the GSAQ factors across samples. Table 21 shows the number of items loading on the original GSAQ factors in the different samples and Table 22 shows the number of items loading on the new factors extracted for the New Zealand (Sample 3), United Kingdom (Sample 4), Balearic Islands (Sample 5) and Canary Islands (Sample 6) samples.

Table 21: Comparison of the number of items loading on the original GSAQ factor structure in the different cultures

		Samples			
	GSAQ	**NZ**	**UK**	**BI**	**CI**
General Avoidance	23	16	11	9	15
Emotional Avoidance	11	10	8	11	10
Conflict Avoidance	9	3	2	5	1

GSAQ: General and Specific Avoidance Questionnaire (original factor structure)

English Samples. NZ: Sample 3 - New Zealand working adults. UK: Sample 4 - United Kingdom university students

Spanish Samples. BI: Sample 5 - Balearic Islands university students. CI: Sample 6 - Canary Islands working adults

Table 22: The number of items per "new" factor extracted for each sample

	Samples			
	NZ	**UK**	**BI**	**CI**
Factor 1	22	16	10	21
Factor 2	10	8	12	11
Factor 3	9	13	13	6

English Samples. NZ: Sample 3 - New Zealand working adults. UK: Sample 4 - United Kingdom university students

Spanish Samples. BI: Sample 5 - Balearic Islands university students. CI: Sample 6 - Canary Islands working adults

Table 23 displays the three highest-loading items, together with their loadings, on each of the factors extracted in the New Zealand (Sample 3), United Kingdom (Sample 4), Balearic Islands (Sample 5) and Canary Islands (Sample 6) samples, followed by a discussion of the similarities and differences in the meaning or 'flavour' of each of the factors across the samples.

Table 23: The three highest loading items on the factors extracted for each of the samples

Factor 1	**Item**	**Item Wording**	**Loading**
New Zealand	29	"I prefer dealing with a problem rather than making up excuses why I shouldn't have to deal with it"	0.694
	39	"I think to myself that I have to deal with the situation, but don't do anything about it"	0.650
	5	"I try to avoid having to deal with the situation"	0.634
United Kingdom	5	"I try to avoid having to deal with the situation"	0.592
	33	"I complain about the situation but don't actually do anything about it"	0.580
	39	"I think to myself that I have to deal with the situation, but don't do anything about it"	0.554
Balearic Islands	34	"Rather than dealing with conflict, I hope it will go away"	0.638
	24	"In difficult situations, I pretend it didn't happen"	0.599

	41	"I usually just ignore things and hope that time will somehow sort them out"	0.571
Canary Islands	5	"I try to avoid having to deal with the situation"	0.657
	39	"I think to myself that I have to deal with the situation, but don't do anything about it"	0.645
	21	"I deal with conflict between me and other people rather than ignoring it"	0.630
Factor 2	**Item**	**Item Wording**	**Loading**
New Zealand	20	"I try not to think about previous bad experiences"	0.648
	35	"I try to forget about unpleasant things I have experienced"	0.646
	31	"I try to distract myself by thinking about other things"	0.625
United Kingdom	35	"I try to forget about unpleasant things I have experienced"	0.585
	18	"I try to ignore memories of difficult situations"	0.564
	20	"I try not to think about previous bad experiences"	0.500
Balearic Islands	2	"I try to think of other things to distract me from thinking about the situation"	0.585
	35	"I try to forget about unpleasant things I have experienced"	0.582
	31	"I try to distract myself by thinking about other things"	0.563
Canary Islands	2	"I try to think of other things to distract me from thinking about the situation"	0.707
	3	"I try not to think about things bothering me"	0.647
	14	"I try not to think about how bad it makes me feel"	0.623
Factor 3	**Item**	**Item Wording**	**Loading**
New Zealand	24	"In difficult situations, I pretend it didn't happen"	0.600
	33	"I complain about the situation but don't actually do anything about it"	0.497
	27	"I pretend that there is no tension between me and others even when there is tension"	0.492
United Kingdom	41	"I usually just ignore things and hope that time will somehow sort them out"	0.591
	34	"Rather than dealing with conflict, I hope it will go away"	0.522
	13	"I deal with unpleasant circumstances by wishing they will just go away"	0.515
Balearic Islands	28	"I deal with the situation immediately"	0.562
	29	"I prefer dealing with a problem rather than making up excuses why I shouldn't have to deal with it"	0.537
	15	"I don't delay dealing with a situation"	0.482

Canary Islands	41	"I usually just ignore things and hope that time will somehow sort them out"	0.535
	22	"If I pretend that the problem doesn't exist it will go away by itself"	0.469
	24	"In difficult situations, I pretend it didn't happen"	0.405

5.4.3.1 General Avoidance

The General Avoidance factor was relatively more stable in the two adult working samples (Sample 3: New Zealand, and Sample 6: Canary Islands) than in the two younger samples (Sample 4: United Kingdom, and Sample 5: Balearic Islands). In both adult samples General Avoidance lost 5 items to other factors each: items 12, 22, 24, 33, 38 to Conflict Avoidance in Sample 3 (New Zealand), and items 22, 24, 37, 41 to Conflict Avoidance and item 1 to Emotional Avoidance in Sample 6 (Canary Islands). Items 7 and 9 did not load on any factors in the two adult samples, and in Sample 6 (Canary Islands) item 17 also failed to load above criterion on any factor.

Despite the differences between them the highest-loading items were similar for the two working adult samples, and clearly preserved the 'flavour' of the original General Avoidance factor. The highest loading items for the New Zealand working adults (Sample 3) were 29, *"I prefer dealing with a problem rather than making up excuses why I shouldn't have to deal with it"* (0.694), 39, *"I think to myself that I have to deal with the situation, but don't do anything about it"* (0.650), item 5, *"I try to avoid having to deal with the situation"* (0.634). For the Canary Islands working adults (Sample 6) the corresponding items were 5, *"I try to avoid having to deal with the situation"* (0.657), 39, *"I think to myself that I have to deal with the situation, but don't do anything about it"* (0.645), and 21, *"I deal with conflict between me and other people rather than ignoring it"* (0.630).

In the two university student samples (Sample 4: United Kingdom and Sample 5: Balearic Islands) the General Avoidance factor was less stable. In Sample 4 ten

items (1, 9, 12, 13, 22, 24, 30, 37, 38, and 41) loaded on the third factor and items 11 and 17 did not load on any factors. In Sample 5 eight items (4, 6, 7, 25, 29, 30, 33, and 39) loaded on the third factor, while item 1 loaded on the second factor. Five items (9, 10, 17, 37, and 38) did not load on any factors in Sample 5 (Balearic Islands). Thus, the General Avoidance scale appeared less stable in the two younger samples with 16 of the original 23 items remaining on this factor in Sample 3 (New Zealand working adults); 15 items remaining in Sample 6 (Canary Island working adults); 11 items remaining in Sample 4 (United Kingdom university students) and 9 items remaining in Sample 5 (Balearic Islands university students).

The highest loadings on Factor 1 in Sample 4 (United Kingdom university students) include item 5, *"I try to avoid having to deal with the situation"* (0.592), item 33, *"I complain about the situation but don't actually do anything about it"* (0.580) and item 39, *"I think to myself that I have to deal with the situation, but don't do anything about it"* (0.554). In Sample 5 (Balearic Islands university students) the highest loadings on Factor 1 included item 34, *"Rather than dealing with conflict, I hope it will go away"* (0.638), item 24, *"In difficult situations, I pretend it didn't happen"* (0.599), and item 41, *"I usually just ignore things and hope that time will somehow sort them out"* (0.571).

5.4.3.2 Emotional Avoidance

Across both English and Spanish samples the Emotional Avoidance factor (Factor 2) remained remarkably stable, with only a few items cross loading on the other factors or not loading on any factors. Item 23 loaded on Factor 3 in Sample 3 (New Zealand working adults). Items 2 and 3 did not load on any factors in Sample 5 (United Kingdom university students) while item 43 loaded on Factor 3. In Sample 5 (Balearic Island university students) Emotional Avoidance (Factor 2) replicated the original Emotional Avoidance factor and all items from this scale loaded on the Emotional Avoidance factor. In Sample 6 (Canary Island working adults) the Emotional Avoidance factor structure replicated the structure obtained in Sample 3

(New Zealand working adults) almost identical, with only item 43 loading on the third factor, as was the case for Sample 3.

The highest loadings on Factor 2 in Sample 3 (New Zealand working adults) was item 20, *"I try not to think about previous bad experiences"* (0.648), followed by item 35, *"I try to forget about unpleasant things I have experienced"* (0.646) and item 31, *"I try to distract myself by thinking about other things"* (0.625). In Sample 4 (United Kingdom university students) the highest loading on Factor 2 was item 35, *"I try to forget about unpleasant things I have experienced"* (0.585), followed by item 18, *"I try to ignore memories of difficult situations"* (0.564) and item 20, *"I try not to think about previous bad experiences"* (0.500). The highest loadings in Sample 5 (Balearic Islands university students) were from item 2, *"I try to think of other things to distract me from thinking about the situation"* (0.585), item 35, *"I try to forget about unpleasant things I have experienced"* (0.582) and item 31, *"I try to distract myself by thinking about other things"* (0.563). Finally in Sample 6 (Canary Island working adults) item 2, *"I try to think of other things to distract me from thinking about the situation"* (0.707) obtained the highest loading, followed by item 3, *"I try not to think about things bothering me"* (0.647) and item 14, *"I try not to think about how bad it makes me feel"* (0.623).

5.4.3.3 Conflict Avoidance

The original Conflict Avoidance (Factor 3) scale appeared to be the least stable across the samples and as pointed out earlier a substantial number of items migrated across to the first factor in this analysis and appeared least stable in Sample 6 (Canary Islands working adults) with only item 27 remaining on this scale in Sample 6. In both adult samples (Sample 3: New Zealand, and Sample 6: Canary Islands) Conflict Avoidance lost 6 items to the first factor (Sample 3: items 8, 15, 21, 28, 32, and 34; Sample 6: items 15, 21, 26, 28, 32, and 34). Items 19, 26 and 27 remained on the third factor (Conflict Avoidance) in Sample 3 and there were no items which did not load on any factors, however in Sample 6 items 8 and 19 did not load on any factors.

Conflict avoidance remained most stable in Sample 5 (Balearic Islands university students with five (15, 21, 26, 28 and 32) of the nine items remaining on the third factor (Conflict Avoidance) and item 34 loading on the first factor. This was almost inverse to the loadings obtained for Sample 4 (United Kingdom university students where the same items loaded on Factor 1 (General Avoidance) rather than Factor 3 (Conflict Avoidance) with the exclusion of item 34 and item 27 which loaded on the third factor in Sample 4. Items 8 and 19 did not load on any of the factors in Sample 4 (United Kingdom), 5 (Balearic Islands) or 6 (Canary Islands). The Conflict Avoidance scale seems most stable in Sample 5 (Balearic Islands), with similar loading patterns obtained for Sample 4 (United Kingdom) and Sample 6 (Canary Islands), and mostly similar in Sample 3 (New Zealand). Only in Sample 3 (New Zealand) did all the items load on at least Factor 1 or Factor 3.

In Sample 3 (New Zealand working adults) the highest loadings on Factor 3 were item 24, *"In difficult situations, I pretend it didn't happen"* (0.600), item 33, *"I complain about the situation but don't actually do anything about it"* (0.497) and item 27, *"I pretend that there is no tension between me and others even when there is tension"* (0.492). The three highest loadings for Sample 5 (United Kingdom university students) included item 41, *"I usually just ignore things and hope that time will somehow sort them out"* (0.591), followed by item 34, *"Rather than dealing with conflict, I hope it will go away"* (0.522) and item 13, *"I deal with unpleasant circumstances by wishing they will just go away"* (0.515).

In Sample 5 (Balearic Islands university students) the highest loadings on Factor 3 included item 28, *"I deal with the situation immediately"* (0.562), item 29, *"I prefer dealing with a problem rather than making up excuses why I shouldn't have to deal with it"* (0.537) and item 15, *"I don't delay dealing with a situation"* (0.482) in the three highest positions. The three highest loading items on Factor 3 in Sample 6 (Canary Islands working adults) included item 41, *"I usually just ignore things and hope that time will somehow sort them out"* (0.535), item 22, *"If I pretend that the problem doesn't exist it will go away by itself"* (0.469) and item 24, *"In difficult situations, I pretend it didn't happen"* (0.405).

5.5 Confirmatory Factor Analysis based on the original GSAQ structure

Chapter 3: Confirmatory Factor Analysis described confirmatory factor analysis (CFA) methodology used in this thesis, with item-based CFA followed by parcel-based analyses. There are strong arguments for using parcelling for instruments like the GSAQ (for example: Kishton & Widaman, 1994; Little, *et al*., 2002), and this was clearly demonstrated in the comparisons between item-based and parcel-based analyses for the two English-speaking samples (Sample 3: New Zealand working adults, and Sample 4: United Kingdom university students) reported in Chapter 3. The same procedure was followed for the Spanish-speaking samples, and again parcelling yielded far more satisfactory results. This section will therefore present only the parcel-based results for the two Spanish samples, followed by a short section comparing the results for Spanish-speaking and English-speaking samples.

5.5.1 Parcel-Based CFA Results based on the original GSAQ factor structure

As described earlier in Chapter 3: Confirmatory Factor Analysis, item-parcelling provides a way of overcoming many of the problems incurred by item-based analyses, and the parcelling methodology used in this chapter is identical to that described in Chapter 3 (see Bandalos, 2002; Brown, 2006; Hall, *et al.*, 1999; Holt, 2004; Kishton & Widaman, 1994; Little, *et al*., 2002).

The CFA analysis reported here was based on the original GSAQ factor structure to assess the relevance of the GSAQ in the two Spanish samples and to compare the results with the fit indices obtained for the New Zealand and United Kingdom samples reported in Chapter 3: Confirmatory Factor Analysis. Sample 6 (Canary Islands) parcels were unidimensional, and all parcels indicated adequate internal consistencies ranging between 0.532 and 0.744, with most well above 0.550. Sample 5 (Balearic Islands) parcels indicated fairly low alpha coefficients, ranging between 0.429 and 0.627, and only five of the nine parcels had alpha coefficients above 0.50. As per the methodology reported in Chapter 3 (see for example Hall, *et al*., 1999) different parcel combinations were attempted to improve the internal

consistency of the parcels. The most adequate parcel combinations that were decided upon for Sample 5 have been included in this section and indicated much improved unidimensionality and alphas of mostly above 0.50, with the exception of one parcel above 0.45.

The results reported for Sample 5 (Balearic Islands) and Sample 6 (Canary Islands) followed a similar trend to that reported for the English samples in Chapter 3 and overall suggests better goodness-of-fit indices for the three-factor model. Sample 5 and Sample 6 data was collected to replicate the EFA, and CFA study findings reported for and replicated in different English-speaking samples as described earlier (see for example the importance of replication in Schmidt, 2009). Table 24 summarises the different factor results for the two Spanish samples.

Table 24: Summary of goodness-of-fit indices for one, two and three-factors (Parcel-based CFA)

	Sample 5 (Balearic Islands)			**Sample 6 (Canary Islands)**		
	Number of Factors			Number of Factors		
	1	2	3	1	2	3
χ^2	305.90	77.94	58.34	430.26	82.76	59.13
df	27	26	24	27	26	24
χ^2 *p*	0.000	0.000	0.000	0.000	0.000	0.000
CFI	0.734	0.950	0.968	0.748	0.965	0.978
TLI	0.645	0.931	0.951	0.665	0.951	0.967
RMSEA	0.174	0.077	0.064	0.220	0.084	0.069

χ^2 = Chi-square

df = degrees of freedom

p = Significance level of χ^2 (*p* <0.05 means the model fit is unsatisfactory)

CFI = Comparative Fit Index (>0.90 is good; >0.95 is very good)

TLI = Tucker-Lewis Index (>0.90 is good; >0.95 is very good)

RMSEA = Root Mean Square Error of Approximation (<0.08 is good; <0.05 is very good)

The results summarised in Table 25 indicates that the three-factor model provided a significantly ($p < 0.001$) better fit than the one and two-factor models for both Spanish samples based on the χ^2_{diff} test.

Table 25: Summary of χ^2_{diff} results for the parcel-based CFA

	Sample 5 (Balearic Islands)			Sample 6 (Canary Islands)		
Factors	χ^2_{diff}	df_{diff}	p	χ^2_{diff}	df_{diff}	p
1 vs. 2	227.96	1	< 0.001	347.50	1	< 0.001
1 vs. 3	247.56	3	< 0.001	371.13	3	< 0.001
2 vs. 3	19.60	2	< 0.001	23.63	2	< 0.001

χ^2_{diff} = Chi-square difference

df_{diff} = degrees of freedom difference

p = Significance level. ($p < 0.05$ means the model difference is statistically significant)

5.5.2 Comparison of the Spanish and English CFA results

Parcel-based CFA results clearly supported the three-factor model in the two English samples, with even the sensitive χ^2 indicating a non-significant ($p = 0.248$) and adequate statistic for the three-factor structure in Sample 4 (United Kingdom university students). RMSEA was equally impressive for the three-factor model in Sample 4 (RMSEA = 0.031), and CFI (0.994) and TLI (0.991) also clearly supported the three-factor model. In Sample 3 (New Zealand working adults) χ^2 was significant ($p < 0.05$, but $p > 0.001$), however CFI (0.976), TLI (0.964) and RMSEA (0.079) all clearly supported the three-factor model.

Although χ^2 was significant for Sample 5 (Balearic Islands), the remaining parcel-based CFA results supported an optimal fit for the three-factor model, with CFI (0.968), TLI (0.951) and RMSEA (0.064) all well within the suggested model fit ranges. In Sample 6 (Canary Islands) the fit indices also supported the three-factor model (CFI: 0.978; TLI: 0.968; RMSEA; 0.069), but using the fit index cut-

off criteria noted in Chapter 3: Confirmatory Factor Analysis (Brown, 2006; Rogelberg, 2004), the two-factor (CFI: 0.965; TLI: 0.951; RMSEA: 0.084) model could also be supported with this sample.

The chi-square difference test indicated clear support for the three-factor model in Sample 3 (New Zealand), Sample 4 (United Kingdom), Sample 5 (Balearic Islands), and also in Sample 6 (Canary Islands). Based on the parcelled CFA results the original GSAQ three-factor model is clearly supported in all four samples. Although the two-factor model may provide an equally well suited framework in Sample 6 (Canary Islands) based on the results obtained for this sample, the three-factor model nonetheless provided superior fit indices and this was confirmed by the Chi-square difference test for nested models.

5.6 Subsidiary Internal Consistency and Factor Correlations analysis based on the three-factor structure extracted for each of the Spanish samples

The three-factor structures derived in the two Spanish samples were not identical to each other or the original GSAQ, and the alpha coefficients and factor correlations below are based on the factor structures obtained for these two samples.

5.6.1 Internal Consistency of the factors extracted in the two Spanish samples

The coefficient alpha internal consistencies reported below in Table 26 for the Balearic Islands (Sample 5) and Canary Islands (Sample 6) samples indicate good overall reliability. Based on these coefficient alpha results, the sample specific factor structures do not offer remarkably different internal consistency coefficients compared to the results reported in Table 18 which were based on the original GSAQ structure.

Table 26: Summary of Internal Consistencies based on the factor structures extracted for the two Spanish samples

	Sample 5 (BI)	Sample 6 (CI)
Factor 1	0.78	0.91
Factor 2	0.81	0.83
Factor 3	0.79	0.66
Total Scale	0.87	0.91

BI: Balearic Islands university students

CI: Canary Islands working adults

5.6.2 Factor Correlations of the factors extracted in the two Spanish samples

Factor correlations for the three factors extracted specifically in the Spanish-speaking samples echoed those based on the original GSAQ structure reported in Table 19. Although all statistically significant ($p < 0.01$), the correlations in both samples were generally modest, indicating that the factors assess relatively independent aspects of avoidance coping. The factor correlations given below in Table 27 are based on the structure obtained in each of the Spanish-speaking samples.

Table 27: Summary of factor correlations based on the factors extracted in the Spanish samples

		Sample 5 (BI)	Sample 6 (CI)
Total Scale	Factor 1	0.774	0.882
	Factor 2	0.735	0.658
	Factor 3	0.785	0.791
Factor 1	Factor 2	0.310	0.252
	Factor 3	0.599	0.657
Factor 2	Factor 3	0.247	0.411

BI: Balearic Islands university students

CI: Canary Islands working adults

5.7 Discussion and Conclusions

5.7.1 Factorial Validation

In view of the inevitable item-migration across factor analyses it was encouraging that the Confirmatory Factor Analysis (CFA) results for the two Spanish-speaking samples generally supported those reported for the English-speaking samples discussed in Chapter 3: Confirmatory Factor Analysis. These indicated a satisfactory fit for three factors based on the original GSAQ structure, particularly for the parcel-based CFA results, and the superiority of the three-factor model was confirmed by the χ^2 difference tests for samples in all parcel combinations.

However, the findings were not clear-cut, and the CFA results for the Spanish samples did suggest that a two-factor solution might also be acceptable. A subsidiary factor analysis constrained to two factors was in fact run on the data from both Spanish samples combined, which yielded a first factor combining items from General Avoidance and Conflict Avoidance and second factor reflecting Emotional Avoidance. However, similar three-factor terminal solutions for the two Spanish-speaking samples separately showed some significant differences between them in terms of the General Avoidance and Conflict Avoidance loadings, which suggests that despite a common language, there are nonetheless cultural differences that distinguish avoidance coping between them.

The factor correlations for the Spanish-speaking samples echoed those for the English-speaking ones, but overall the results showed that while Emotional Avoidance (Factor 2) contains items generally understood in a similar context by the two language groups, the General Avoidance (Factor 1) and Conflict Avoidance (Factor 3) items are perceived in different ways between cultures. The discussion that follows will therefore focus on General Avoidance and Conflict Avoidance rather than the more stable Emotional Avoidance scale, and will examine differences in the intrinsic meaning of the factors by comparing the 'flavour' of the obtained factors conferred primarily by the highest-loading items.

5.7.2 The meaning of the factors extracted for the different samples

The predominant items on the General Avoidance factor in *Sample 3* (New Zealand working adults) relate to engaging with a problem rather than trying to avoid it, even with the addition of the original Conflict Avoidance items. Factor 3 for this sample contains more items from the original General Avoidance factor than the original Conflict Avoidance factor, and also included two items from the original Emotional Avoidance factor. Factor 3, in this instance, appears to relate to pretending that a problem does not exist, which, together with Factor 1, resonates with informal discussions the researcher has had with various business consultants and colleagues in New Zealand. Although anecdotal, there is a well-known New Zealand expression "*she'll be right*", which is intended to imply that "things will sort themselves out in time". In other words, in Sample 3, there seems to be a structure reflecting Emotional Avoidance as in the other samples, but also what seems to relate to engagement rather than avoidance, i.e. preferring to deal with a problem rather than avoiding it (Factor 1), and a third factor which relates to pretending that a problem does not exist.

In *Sample 4* (United Kingdom students) Emotional Avoidance remained a stable factor, apart from losing two items due to no loadings on any factor and item 43 (*"If something upsets me, I try to just blot the whole thing out of my mind"*) to Factor 3 on this sample, where it fits well with the other items on that factor (predominantly trying to deal with a problem by pretending it does not exist and hoping that it will go away). Factor 1 reflected items relating to inaction and ignoring or delaying dealing with a situation. In this sample, a way of describing these factors is that Factor 1 relates to distraction and Factor 3 to suppression.

Sample 5 (Balearic Islands Students) indicated a similar robust Emotional Avoidance factor, with the addition of one item from the original General Avoidance scale. This latter item (*"I try to ignore thinking about the situation"*) fits well with the Emotional Avoidance construct. Factor 1 for this sample has fewer items than the first factor for any of the other samples, with only ten items loading on it. Items loading on Factor 1 in this sample relates to hoping things will

sort itself out and resorting to inaction by trusting and accepting fate. Factor 3 for this sample was almost balanced for items from the original General Avoidance (8 items) and original Conflict Avoidance (5 items). This factor is similar in nature to the Factor 1 in Sample 4 (United Kingdom university students), reflecting dealing with a problem rather than trying to pretend it doesn't exist. In this sample, Emotional Avoidance is a stable factor, and Factor 1 indicates leaving problems in the hands of fate, and Factor 3 points to taking action immediately, or not delaying dealing with problems.

The Emotional Avoidance factor in *Sample 6* (Canary Islands working adults) resembled the item structure seen in Sample 5 (Balearic Islands), with the addition of the original General Avoidance item number 1, however, the original Emotional Avoidance item 23 loaded on Factor 3 for this sample. Factor 1 in this sample replicated the items loading on Factor 1 in Sample 3 (New Zealand working adults), also indicating engaging with a problem rather than avoiding it. A large proportion of items from the Sample 3 (New Zealand) and Sample 4 (United Kingdom) factor analysis mirrored Factor 1 obtained in this sample (Sample 6). Factor 3 for Sample 6 contained only six items, of which one double loaded on Factor 2 and one double loading on Factor 1. Nevertheless the items loading on the new Factor 3 resembles suppression, similar to Sample 3 (New Zealand), by pretending that a problem does not exist.

5.7.3 Avoidance Coping and the Role of Intrusive Thoughts

In Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms, the concurrent validation study indicated that Emotional Avoidance is distinctly different from Rumination and Detached Coping in Samples 3 (New Zealand working adults: r = 0.075 and r = - 0.006 respectively) and 4 (United Kingdom university students: r = 0.053 and r = 0.072 respectively). There has been some debate about whether individuals select a coping style from a repertoire to suit particular situations or whether they become habituated to using a particular coping style (see for example Folkman & Lazarus, 1985; Terry, 1994), and it is useful to

place the issue in the context of intrusive thoughts. One way to cope with them is to dwell on them, which is what rumination is, and there is evidence that rumination is prevalent across cultures (Roger, *et al*., 2001).

A second strategy is to use avoidance, and in the present thesis Emotional Avoidance was also shown to be stable across cultures. While the findings don't specifically answer the question, combined with the relative stability of both Rumination and Emotional Avoidance over time they do suggest that individuals might tend to rely on a particular habitual coping strategy. Although the factor structures for the other two dimensions of the GSAQ – General Avoidance and Conflict Avoidance – differed across cultures, the relative stability of the scales suggest that these strategies might also represent habitual behaviours.

The suggestion that individuals will tend to employ habitual ways of responding provides one reason why avoidance coping is regarded as a maladaptive strategy (for example, Kashdan, *et al*., 2006; Ottenbreit & Dobson, 2004; Rector & Roger, 1996), since it limits the available strategies to just avoidance rather than being able to adapt and modify behaviour. This might also help to explain why avoidance may be adaptive in the short term but not in the longer term (for example, Davies & Clark, 1998; Suls & Fletcher, 1985; Weinstein, *et al*., 2009): avoiding an intense emotional demand might be appropriate at the time that it occurs, but will probably need to change to a more engaged strategy if the issue is successfully to be resolved. The effects of being either high or low on avoidance were implicated to some extent in the study reported in Chapter 7: Avoidance Coping and Cardiovascular Activity in Response to Laboratory-Manipulated Conflict Scenarios, but this was a controlled and specific experimental manipulation conducted over a short period. Examining these issues and the relationship between avoidance coping and other ways of responding to intrusive thoughts was beyond the scope of this thesis, but should provide a fruitful avenue for future research.

5.7.4 Sample differences in General, Emotional and Conflict Avoidance

Overall trends in mean scale scores based on the original GSAQ structure were examined by running subsidiary Analyses of Covariance (ANCOVA), controlling for gender and age. These results have not been reported in detail owing to differences in factor structures across and within cultures, but briefly the findings showed that the Spanish-speaking samples reported lower levels of avoidance coping than the two English-speaking samples. Comparing female with male subsamples is compounded by significant differences in the numbers of males and females in the samples, but a subsidiary ANCOVA controlling for age showed that females from the two Spanish-speaking samples generally reported lower levels of avoidance coping than females from the English-speaking samples.

It is difficult to account for these differences, but they might be attributable to generational differences in undergraduate and working adult samples and the diverse ethnic makeup of the two English-speaking samples in particular. Speculatively, other possible explanations might be that participants from different countries have to deal with different kinds of stressors owing to differences in societal issues and norms in their respective countries (e.g. Connor-Smith & Calvete, 2004), and other subsidiary ANCOVA results showed that Spanish samples are generally more inclined to face conflict than the English-speaking samples. Overall, the New Zealand sample scored higher on conflict avoidance than the other three samples, which is in line with anecdotal evidence from general discussions by the researcher with various business consultants in New Zealand as well as observations made while with local industry. However, these are speculative observations, and it should be borne in mind that the initial scenarios used to develop the GSAQ items were based on potentially stressful situations provided by a global English-speaking sample from non-Spanish backgrounds. This might well have affected the results.

Although Spaniards are more inclined to face conflict than the New Zealand and United Kingdom samples, there are anecdotal suggestions that residents of the Balearic Islands (Sample 5) and Canary Islands (Sample 6) are less likely to face

conflict than Spaniards in mainland Spain (G. Garcia de la Banda, personal communication, February 05, 2013). It is also thought that Balearic Islands people are more critical and resentful in their demeanour than those in the Canary Islands (G. Garcia de la Banda, personal communication, February 05, 2013). It was certainly true that while only one item from the original Conflict Avoidance scale loaded on Factor 3 for the Canary Islands sample, five items did so for the Balearic Island sample. However, these views are based on very general speculative cultural stereotypes. A simpler explanation might simply be the generational difference between the samples, again indicating an avenue for future research that could not be included in this thesis project. These observed differences, and the speculative explanations offered for them, could provide a rich avenue for further exploration of cultural, gender and generational differences in avoidance coping using the GSAQ. The scenario and life domains study further offers the opportunity to explore the coping process more qualitatively for example by generating culture-specific scenarios and comparing the responses to them with those obtained in other cultures.

5.7.5 Summary

Despite differential item loadings the results showed an Emotional Avoidance factor that was consistent across cultures. More substantial differences in the other two factors suggest that perhaps a two–factor solution might be considered for Spanish-speaking cultures. Further research would be required to validate these initial cross-cultural results, and it would be interesting to proceed by generating a set of scenarios from within these cultures – the items for the GSAQ were based on a preliminary scenario exercise based entirely on English-speaking participants, which might well have influenced the factor structures obtained in the Spanish-speaking samples. However, the results reported here do nonetheless support earlier calls for further and more in-depth analysis of cultural and societal differences in coping behaviour (for example Aguilar-Vafaie & Abiari, 2007; Dunahoo, *et al*., 1998; Kuo, *et al*., 2006).

The factor correlations and internal consistencies reported in this chapter suggested that the GSAQ behaves fairly consistently in different cultures and age groups, and sample mean score differences were therefore included as a subsidiary discussion. This highlighted a number of differences in avoidance coping, but these differences should also be considered from a factorial point of view, where the results reported in this chapter resonate with previous reports indicating differential factor structures in different cultures (see for example Aguilar-Vafaie & Abiari, 2007; Roger, *et al*., 2001; Sica, *et al*., 1997). The only factorially stable scale extracted in this thesis was Emotional Avoidance, which begs the question whether more elaborate multidimensional avoidance coping questionnaires such as the CBAS (Ottenbreit & Dobson, 2004), CAQ (Gosselin, *et al*., 2002), and MEAQ (Gámez, *et al*., 2011) would be likely to provide stable structures across cultures.

In conclusion, the differences in factor loadings reported in this thesis confirm previous studies and suggest that caution should be used when interpreting not only cultural differences but also generational and gender differences. Scientific endeavour is a continuous, additive process, and as is usually the case the findings reported here raises as many questions as they answer. However, the GSAQ should provide an ideal instrument for progressing the research on cross-cultural differences and similarities in avoidance coping.

Chapter 6: Avoidance Coping and Deliberate Self-Harm

6.1 Introduction to Deliberate Self-Harm

Noting the World Health Organization's 2001 report that approximately 814,000 deaths worldwide in the year 2000 can be accounted for by self-inflicted injuries, Zakiullah, Saleem, Sadiq, Sani, Shahpurwala, Shamin, Yousuf, Khan and Nayani (2008) point out that deliberate self-harm is a major public health concern. A number of studies exploring patterns of deliberate self-harm and coping strategies, including experiential avoidance, have been conducted using prison samples and clinical samples (see for example Borrill, *et al.*, 2003; and Chapman, Specht & Cellucci, 2005). However, there is limited information available on coping strategies in relation to non-suicidal deliberate self-harm behaviour in non-clinical populations (Brown, Williams, & Collins, 2007), and indeed, these authors note that no published research has been done with regard to coping strategies among non-clinical self-harmers.

Nonetheless, a few studies have alluded to a possible relationship between avoidance coping and deliberate self-harm, and since individuals who deliberately self-harm appear to implement ineffective coping strategies and/or fail to make use of skilful coping strategies, some researchers have indicated that experiential avoidance may offer a potential explanation (for a review see Borrill, *et al*., 2009; Brown, *et al*., 2007; Chapman, Gratz, & Brown, 2006; & Chapman, *et al*., 2005). Despite the limited research on coping strategies and deliberate self-harm in non-clinical samples, it appears that experiential avoidance and deliberate self-harm may help the individual to escape from unwanted emotional experiences (Chapman, *et al*., 2006).

Although the evidence is anecdotal, the importance that health professionals attach to avoidance coping in self-harming behaviour can be gauged from a personal, unsolicited e-mail message that was sent to the author of this thesis by one of the participants in the overall development of the GSAQ. The author of the e-mail,

who is employed in a Public Health Organisation in New Zealand, was unaware of the intention to explore the relationship between avoidance coping and deliberate self-harm, but referred explicitly to what they saw as a clear link between avoidance coping and suicide.

One of the advantages of using the GSAQ for this study is that it offers a multi-faceted approach rather than a one-dimensional instrument. This is supported by studies such as the one by Zakiullah, *et al*. (2008), who indicated that a high proportion of individuals who presented with deliberate self-harm at a hospital in Pakistan reported conflict with a family member (n = 161; 73.18%) as one of the precipitating factors to deliberate self-harm. In some of these cases at least, self-harm might provide a means for avoiding conflict. The GSAQ includes factors for general avoidance, emotional avoidance and conflict avoidance, and the scale thus provides an ideal instrument for assessing the possible multidimensional nature of the relationship between avoidance and self-harm.

Self-harm has been defined in various ways by different authors and researchers, in part because research in the area of deliberate self-harm is still relatively 'new' (Gratz, 2001). This chapter therefore includes a brief overview of self-harm, to create the context for understanding the role of avoidance in deliberate self-harm.

6.1.1 Definition of Deliberate Self-Harm

Deliberate self-harm, self-destructive behaviour, self-injury, self-injurious behaviour, self-mutilation, non-suicidal self-injury, among others, are some of terms used in self-harm research (see Borrill, *et al*., 2009; Gratz, 2001). The first empirically validated questionnaire for self-harm was the Deliberate Self-Harm Inventory (DSHI) developed by Gratz (2001). This measure is used in this thesis, and consequently the definition of deliberate self-harm which will be relied upon is the one proposed by Gratz (2001, page 254): *"Deliberate self-harm may then be specifically defined as the deliberate, direct destruction or alteration of body tissue without conscious suicidal intent, but resulting in injury severe enough for tissue damage (e.g., scarring) to occur."*

Considering the prejudicial stigma that may be attached to the list of self-harming behaviours by the general public and clinicians alike, Gratz (2001) argues that the term deliberate self-harm has the least negative connotation. This was an important consideration in the current thesis, which is based on a non-clinical sample where confidential self-reported disclosure is required, rather than relying on clinical evidence gathered during for example hospital admission or presenting at a public health establishment.

6.1.2 The Prevalence of Deliberate Self-Harm

The reported prevalence of deliberate self-harm varies widely across studies, and in the interest of brevity only selected research will be reported below, in chronological order.

Amongst 150 undergraduate students (68% female), ranging in age from 18 to 64 years and from various ethnic backgrounds (60% Caucasian American), Gratz (2001) reported a 35% incidence of deliberate self-harm. Fifteen percent reported more than 10 incidents of self-harm and 9% reported more than 100 incidents. Of those who reported self-harming, 86% reported harming themselves more than once, and 68% of self-harmers reported multiple methods of self-harming. Thirty-four percent of men and 38% of women reported self-harm in the study, with the most prevalent methods being cutting (14%), sticking pins, needles, staples into skin (14%), severe scratching (12%), and head-banging (11%).

Borrill, *et al*. (2003) assessed patterns of self-harm in white (n = 190) and black/mixed (n = 111) race female prisoners from prisons across England, and 55% of white women and 43% of black/mixed race women reported at least one act of self-harm. Nineteen percent of white women reported two to five incidents of self-harm compared to 12% of black/mixed race women. An association was found between family violence and self-harm in both groups, and thirty-four percent of the overall sample reported starting to self-harm between the ages of 13 and 17 years. In a study of experiential avoidance and self-harming behaviour, 47.6% of a sample of American female prison inmates had a lifetime prevalence of past self-harm

(Chapman, *et al*., 2005), and 73% of participants diagnosed with Borderline Personality Disorder in this sample reported self-harm.

Brown, *et al*. (2007) recruited 223 students (76% female) with an average age of 19.4 years, and using the DSHI (Gratz, 2001) found that 10.3% had engaged in self-harm behaviour in the last 12 months and 17.5% 12 or more months ago. Overall 27.8% had engaged in self-harm at some time, and the most frequent forms of self-harm included sticking oneself with sharp objects, scratching, head banging, carving words or marks into skin, preventing healing, cutting oneself. No statistically significant differences were found between men and women for the number of self-harm behaviours.

In the study by Zakiullah, *et al*. (2008) referred to earlier, the majority of the 284 cases presenting with deliberate self-harm at a hospital in Pakistan over a 6-year period were women (60.3%). The most common age group was between 21 – 25 years, followed by those between 16 – 20 years, but ages ranged from 8 – 82 years old. However, 143 cases reported suicide as their main intention for deliberate self-harm, with the most frequently reported methods being poisoning (97.5%) and over-dosing on benzodiazepines (47.3%).

In another study of prison inmates, Kirchner, Forns & Mohíno (2008) used a sample of 102 male prisoners from a young offender unit in Barcelona, Spain, ranging between 18 – 25 years of age. Of these, 23.53% had inflicted deliberate self-harm on one or more occasion during their imprisonment.

A study using a large sample of UK students (N = 617, 475 females and 142 males) aged between 18 – 62 years (mean age 23.4), Borrill, *et al*. (2009) found that 27% reported at least one incident of self-harm and almost 10% reported harming themselves deliberately while at university. There was no statistically significant gender difference, but students studying psychology did report significantly higher levels of self-harming than students in other courses. Fifty-three percent reported scratching or biting skin, 46% cutting, and 31% took an overdose, with nearly half using two or more methods (see also Borrill, *et al*., 2011).

It is clear from this summary that deliberate self-harm is prevalent in non-clinical as well as clinical and prison settings, and determining the relationship between self-harm and multidimensional coping, especially avoidance coping, should provide significant insights into the factors that contribute to self-harming behaviour.

6.1.3 Avoidance Coping and Deliberate Self-Harm – Current Evidence

The studies reviewed above do suggest that there might be a relationship between avoidance coping and deliberate self-harm, and in addition to endorsing the possible role of experiential avoidance, Chapman, *et al*. (2006) suggested that it might function by providing the means for escaping from unwanted emotional upsets. This aligns with the findings reported in the Zakiullah *et al*. (2008) study of hospital admissions for self-harm., and the prisoners most at risk of self-harming in the study by Kirchner, *et al*. (2008) were those who used more avoidance and less approach coping.

Chapman, *et al*. (2005) reported a relationship between thought suppression and deliberate self-harm (r = .27, p<.01). These authors found no significant relationships with avoidance measured by the COPE (Carver, *et al*., 1989) questionnaire, but as has already been pointed out, the COPE suffers from a number of psychometric shortcomings. Exploring the role of the experiential avoidance model (EAM) in deliberate self-harm, Chapman, *et al*. (2006) concluded that the model provides a promising direction for both future research and the development of clinical interventions.

Borrill, *et al*. (2009) reported higher avoidance coping and lower rational coping scores amongst university students who self-harmed, and in a study employing logistic regression analysis, avoidance coping measured with the CSQ3 (Roger, *et al*., 1993) emerged as a significant predictor of self-harming in a non-clinical university student samples (Borrill, *et al*., 2011).

Despite widespread theoretical views and clinical practice indicating a strong link between avoidance coping and deliberate self-harm, few studies have explicitly explored this relationship, with no research at all exploring the link using a multidimensional avoidance coping model. In light of the existing evidence it is therefore hypothesised that avoidance coping may predict the occurrence of deliberate self-harm in the current sample. The new GSAQ provides the opportunity to do so.

6.2 Method

6.2.1 Procedure

The project received ethics approval from the University of Canterbury Human Ethics Committee. Voluntary participants were recruited via the research participation scheme of the University of Westminster in London, England, and participants in the research received course credit for their participation. As stated in Chapter 3, additional ethics approval was obtained from the University of Westminster owing to the sensitive nature of the deliberate self-harm study, and due to the course-credit inducement. The confidential surveys were made available via a secure online website. The concurrent scales included in the online questionnaire package described in Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms were included in the current study, apart from the Physical Symptoms Inventory (PSI) which was replaced by the Deliberate Self-Harm Inventory (DSHI – Gratz, 2001).

The DHSI is described below, and in addition to the DSHI the scales included were the Proactive Coping scale from the Proactive Coping Inventory (PCI - Greenglass, *et al*., 1999; Greenglass, *et al*., 1999), the Depression Anxiety and Stress Scales (DASS21 - Lovibond & Lovibond, 1995), the Detached coping scale from the Coping Styles Questionnaire (revised version CSQ3 - Roger, *et al*., 1993), and the Rumination scale from the Inhibition-Rumination Scale (I-RS - Roger, *et al*., 2011). The concurrent scales and subsequent results of the concurrent analysis are

discussed below. The complete concurrent scale correlation tables are included in Appendix 11: Concurrent Correlation Table for Sample 4: United Kingdom university students.

6.2.2 The Deliberate Self-Harm Inventory (DSHI)

The Deliberate Self-Harm Inventory (DSHI – Gratz, 2001) is a 17-item behaviourally-based measure of self-harm. It incorporates a 'yes/no' self report format and explores the direct destruction of body tissue (Gratz, 2001; Sansone & Sansone, 2010). Respondents are also asked to indicate the frequency, severity, and duration of such events, and when last they have attempted the particular method of self-harm. The DSHI has satisfactory internal consistency and retest reliability over a two to four week interval (Gratz, 2001). The stem question for each of the items states: *"Have you ever intentionally (i.e., on purpose)..."* followed by for example: *"cut your wrists, arms, or any other area(s) of your body (without intending to kill yourself)? (Circle one) YES / NO."* Follow-up questions ask about when last the participant engaged in this behaviour, how many times they have done it, how many years they have done it for, and whether the behaviour resulted in hospitalisation or injury severe enough to require medical treatment (Gratz, 2001).

For the analysis of the DSHI responses in this study, SPSS syntax (Brace, *et al*., 2006) was written and run to recode and reverse score relevant items, and to calculate scale totals. Differences between the self-harm and no self-harm groups were analysed using mean comparisons and regression analysis.

6.3 The Sample

The participants formed the sample referred to as Sample 4, described in Chapter 4 (Table 15 in Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms summarises the attributes of Sample 4). Sample 4 was recruited from the University of Westminster first year psychology cohort, and for the self-harm study 155 females aged between 18 and 43 years (M = 19.93; SD = 4.05; two participants

did not indicate their ages) provided usable responses. The remainder of the usable responses were 17 males aged between 18 and 26 years (M = 19.25; SD = 1.95; one participant did not indicate his age). Most of the participants were full-time (n = 155) or part-time (n = 11) students, with six participants not indicating their occupational status. All participants were attending a first-year psychology course, and received course credit for their participation through the university's research participation scheme. The majority of participants indicated they were British (n = 108), British Other (n = 21), or European (n = 15) and 28 participants indicated other nationalities or did not disclose their nationality. As noted in the Introduction to Chapter 1: Introduction and Literature Review, the term non-clinical sample in this thesis refers to a non-clinical setting, rather than the diagnosable physical and psychological conditions of the sample. University students samples have previously been referred to as non-clinical populations (see for example Borrill, *et al.*, 2009; Borrill, *et al.*, 2011, and Brown, Williams, Collins, 2007).

6.4 Results

6.4.1 Frequency of self-harm

A total of 55 (31.98%) participants reported that they had engaged in some kind of self-harm behaviour at some point in their lives, and 16 (9.30%) indicated that they had self-harmed in the past year. In the sample of participants who indicated that they had self-harmed, seven (12.73%) indicated that they had only self-harmed once, while 30 (54.55%) reported 2-9 incidents, and 18 (32.73%) reported 10 or more incidents of self-harm. Five (29.41%) of the 17 males indicated at least one incidence of self-harm, while 50 (32.26%) of the 155 females indicated at least one incidence of self-harm.

6.4.2 Methods of self-harm

For participants who reported self-harm, the methods employed were: cutting (n = 26; 47.27%), scratching (n = 22; 40.00%); banging head (n = 9; 16.36%), carving pictures, designs, or other marks into skin (n = 8; 14.55%), and preventing wounds

from healing (n = 8; 14.55%). The rest of the self-harm methods ranged between 1-12%, and "rubbing sandpaper on your body", "dripping acid onto skin" and "broken your own bones" had no endorsements.

6.4.3 Depression, anxiety and stress

Independent-samples *t*-tests were run to test for differences in depression, anxiety and stress between the self-harm and the no self-harm group. Where appropriate Levene's test for equality of variances will be indicated (Brace, *et al*., 2006). The self-harm group (M = 6.51; SD = 4.37) reported significantly higher DASS21 Depression (t = -2.757, df = 170, p < .01, two-tailed) levels than the no self-harm group (M = 4.67; SD = 3.95). The self-harm group (M = 5.98; SD = 4.17) also reported higher levels of DASS21 Anxiety than the no self-harm group (M = 3.90; SD = 3.22) (t = -3.592, df = 170, p < .001, two-tailed). The differences between the two groups were also highly significant in terms of their reported levels of DASS21 Stress (t = -3.808, df = 170, p < .001, two-tailed), with the self-harm group (M = 8.47; SD = 4.25) reporting higher levels of stress than the no self-harm group (M = 6.10; SD = 3.58).

Table 28: Self-harm status and differences in mean sample depression, anxiety and stress scores.

	Self-harm status			**Sample Effects**		
	Any self-harm (n = 55)	**No self-harm (n = 58)**	**No self-harm (n = 59)**	***F***	***p***	**partial ŋ2**
DASS21 Depression (SD)	6.51 (4.37)	4.88 (4.41)	*4.46 (3.46)	3.941	0.021	0.045
DASS21 Anxiety (SD)	5.98 (4.17)	**3.71 (3.08)	*4.08 (3.36)	6.591	0.002	0.072
DASS21 Stress (SD)	8.47 (4.25)	*6.41 (3.82)	**5.80 (3.34)	7.623	0.001	0.083

* Indicates the group mean scores differ significantly from the self-harm group at the 0.05 level (post-hoc Bonferroni, Sheffe, Dunnett's C)

** Indicates the group mean scores differ significantly from the self-harm group at the 0.01 level (post-hoc Bonferroni,Sheffe)

Table 28 reports the sample mean scores and standard deviations, *F* ratios and effect sizes for depression, anxiety and stress reported by the self-harm and two randomly assigned no self-harm groups. In view of the large sample size differences between the subsamples, a subsidiary analysis was run in which participants from the no self-harm sample were randomly assigned to two groups (n = 58 and n = 59) and compared to the self-harm group (n = 55). Comparisons were based on three-level ANOVAs comparing the three groups, and an initial manipulation check confirmed that there were no significant differences between the two no self-harm groups (Bonferroni and Sheffe both $p > 0.65$ and Dunnett's C $p > 0.05$ in all instances). Bonferroni, Sheffe and Dunnett's C (assuming unequal variances) post-hoc analysis replicated the patterns observed for the *t*-test results reported with the differences between the no self-harm groups and self-harm group significant at the $p < 0.05$ level (except for one group on the DASS21 Depression scale) and one group each at $p < 0.01$ for DASS21 Anxiety and DASS21 Stress. In all instances the no self-harm groups reported lower depression, anxiety and stress than the self-harm group.

6.4.4 Coping style and emotional response differences

To assess whether individuals who have self-harmed at some point in their lives cope differently from individuals who reported that they have never self-harmed, a set of independent-samples *t*-tests were run for coping strategies. This was done for all the coping strategies assessed during the concurrent analysis reported in Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms, but more specifically to assess differences with regard to avoidance coping as measured by the GSAQ. Where appropriate Levene's test for equality of variances will be indicated (Brace, *et al*., 2006).

The self-harm group reported higher (M = 16.96; SD = 8.14) GSAQ Total Avoidance than the no self-harm group (M = 15.30; SD = 7.99), but the difference was not statistically significant (t = -1.267, df = 170, p = .207, two-tailed). The self-harm group also reported higher scores than the than the no self-harm group for

GSAQ General Avoidance (Self-harm: *M* = 7.55; *SD* = 5.55; No self-harm: *M* = 6.32; *SD* = 4.80), GSAQ Emotional Avoidance (Self-harm: *M* = 6.18; *SD* = 2.75; No self-harm: *M* = 6.16; *SD* = 2.78) and GSAQ Conflict Avoidance (Self-harm: *M* = 3.24; *SD* = 2.28; No self-harm: *M* = 2.82; *SD* = 2.24), but the differences in all instances were non-significant: (GSAQ General Avoidance: *t* = -1.489, *df* = 170, *p* = .138, two-tailed; GSAQ Emotional Avoidance: *t* = -0.043, *df* = 170, *p* = .966, two-tailed; GSAQ Conflict Avoidance: *t* = -1.128, *df* = 170, *p* = .261, two-tailed).

There was no difference between the two groups in relation to their reported PCI Proactive Coping scores (*t* = -0.105, *df* = 170, *p* = .917, two-tailed). The self-harm group (*M* = 30.93; *SD* = 8.28) reported significantly lower use of CSQ3 Detached Coping (*t* = 2.987, *df* = 170, *p* < .01, two-tailed) than the no self-harm group (*M* = 34.74; *SD* = 7.56) and the difference between the two groups in terms of their I-RS Rumination scores was also highly significant (*t* = -3.791, *df* = 170, *p* < .001, two-tailed) - the self-harm group (*M* = 10.20; *SD* = 4.26) reported higher levels of rumination than the no self-harm group (*M* = 7.74; *SD* = 3.84).

Table 29: Self-harm status and differences in mean sample coping and emotion response scores.

	Self-harm status			**Sample Effects**		
	Any self-harm (*n* = 55)	**No self-harm (*n* = 58)**	**No self-harm (*n* = 59)**	***F***	***p***	**partial ŋ2**
GSAQ Total Avoidance (SD)	16.96 (8.14)	14.24 (7.37)	16.34 (8.49)	1.809	0.167	0.021
GSAQ General Avoidance (SD)	7.55 (5.55)	5.67 (4.35)	6.95 (5.16)	2.054	0.131	0.024
GSAQ Emotional Avoidance (SD)	6.18 (2.75)	5.90 (2.78)	6.42 (2.77)	0.532	0.589	0.006
GSAQ Conflict Avoidance (SD)	3.24 (2.28)	2.67 (2.27)	2.97 (2.23)	0.881	0.416	0.010
PCI Proactive (SD)	41.82 (4.64)	42.09 (7.19)	41.36 (4.64)	0.233	0.792	0.003
CSQ3 Detached (SD)	30.93 (8.28)	*34.67 (8.10)	*34.80 (7.07)	4.438	0.013	0.050
I-RS Rumination (SD)	10.20 (4.26)	**7.83 (3.93)	**7.64 (3.79)	7.175	0.010	0.078

* Indicates the group mean scores differ significantly from the self-harm group at the 0.05 level (post-hoc Bonferroni, Sheffe, Dunnett's C)

** Indicates the group mean scores differ significantly from the self-harm group at the 0.01 level (post-hoc Bonferroni,Sheffe)

Table 29 reports the sample mean scores and standard deviations, *F* ratios and effect sizes for coping and emotional responses reported by the self-harm and two randomly assigned no self-harm groups. In the previous section a subsidiary analysis was run using three-level one-way ANOVAs, in which the no self-harm group was randomly divided into two to provide more matched sample sizes. Following the same procedure in this section with the same randomly allocated no self-harm groups, Bonferroni ($p > 0.40$ in all instances), Sheffe ($p > 0.30$ in all instances), and Dunnett's C ($p > 0.05$ in all instances) post-hoc analysis indicated that there were again no significant differences between the two no self-harm groups, as expected. Bonferroni, Sheffe and Dunnett's C post-hoc analysis replicated the results obtained with *t*-tests and indicated differences for CSQ3 Detached Coping (all $p < 0.05$) and I-RS Rumination (all $p < 0.01$) between the no self-harm groups and self-harm subsample.

6.4.5 Subsidiary analysis: Self-harm within the past year versus Self-harm more than a year ago or Never.

Although the group indicating that they had attempted self-harm in the past year was small (0YSH: $n = 16$) compared to the groups who indicated self-harm attempts more than a year ago (1YSH: $n = 39$) or never (NoSH: $n = 117$), an exploratory subsidiary analysis was run on the data using simple independent samples *t*-tests and Levene's test for the equality of variances. The analysis revealed no significant differences on any of the GSAQ dimensions across groups, and no group differences emerged for PCI Proactive Coping either. The group which did not self-harm (NoSH: $M = 34.74$; $SD = 7.56$) reported significantly higher ($t = 2.002$, $df = 154$, $p < .05$, two-tailed) CSQ3 Detached Coping than the group which self-harmed more than a year ago (1YSH $M = 31.87$; $SD = 8.23$) and also more ($t = 3.001$, $df = 131$, $p < .01$, two-tailed) than the group which indicated that they had self-harmed in the past year (0YSH: $M = 28.63$; $SD = 8.19$). The 0YSH group which indicated self-harm attempts in the past year reported lower CSQ3 Detached Coping than the group which self-harmed more than a year ago (1YSH), but the difference was not significant ($t = -1.331$, $df = 53$, $p = .189$, two-tailed).

The same analysis was run for I-RS Rumination. The NoSH group (M = 7.74; SD = 3.84) reported lower (t = -2.464, df = 154, p < .05, two-tailed) levels of rumination than the 1YSH group (M = 9.51; SD = 4.08) and also lower (t = -3.983, df = 131, p < .001, two-tailed) than the 0YSH group (M = 11.88; SD = 4.33). The difference in reported rumination between the two self-harm groups (0YSH and 1YSH) approached significance at the 0.05 level (t = 1.914, df = 530, p = .061, two-tailed).

6.4.6 Logistic regression analysis

Binary logistic regression analyses were run in order to test the contribution of depression, anxiety and stress, in the first instance, to predicting any form of self-reported self-harm. Further binary logistic regressions were run to test the contribution of coping strategies and emotional responses. The correlations amongst the different measures were generally relatively low, which reduces the risk of multicollinearity bias in regression analyses (see e.g. Brace, *et al*., 2006), but they were in some cases nonetheless statistically significant (the correlations can be seen in Appendix 11: Concurrent Correlation Table for Sample 4: United Kingdom university students). To provide a clearer overview, different sets of variables were therefore entered into separate logistic regressions in order to test which variables in specific clusters predicted self-harm status. Two clusters were formed, defined by the broader constructs which they measured, namely: psychological health (DASS21 Depression, Anxiety and Stress); and emotional response (I-RS Rumination) and coping (GSAQ Avoidance scales, PCI Proactive Coping and CSQ Detached Coping). Finally, to test the role of multidimensional avoidance coping in particular, only the GSAQ Avoidance scales were entered into a logistic regression model. The results for each cluster will be discussed separately in the sections which follow.

6.4.6.1 Depression, anxiety and stress

The first logistic regression was performed with any self-harm as the dependent variable and DASS21 Depression, DASS21 Anxiety and DASS21 Stress as

predictor variables. A total of 172 cases were analysed and the full model significantly predicted self-harm (omnibus χ^2 = 16.599, *df* = 3, *p* = .001). The model accounted for between 9.2% and 12.9% in self-harm status with 94% of non-self-harmers predicted correctly, however only 29.1% of the predictions for self-harm were accurate. Overall 73.3% of the predictions were accurate. Table 30 gives the coefficients and Wald statistic with associated degrees of freedom, as well as probability values for each of the predictor variables entered into the model.

Table 30: Summary statistics of the self-harm and psychological health regression analysis.

							95% C.I.for EXP(B)	
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Step 1[a]	DASS21 Depression	.025	.048	.274	1	.601	1.025	.934	1.125
	DASS21 Anxiety	.085	.056	2.261	1	.133	1.088	.975	1.216
	DASS21 Stress	.098	.055	3.139	1	.076	1.103	.990	1.230
	Constant	-2.015	.388	26.965	1	.000	.133		

The table shows that none of the three variables reliably predicted self-harm, but that the best predictor was stress. Each unit of increase in stress is associated with an increase in the odds of self-harm by a factor of 1.103 (95%CI 0.9990 – 1.230).

6.4.6.2 Coping and emotional responses

Table 31 summarises the results from the regression analysis run for GSAQ Total Avoidance coping, PCI Proactive Coping, CSQ3 Detached Coping and I-RS Rumination.

Table 31: Summary statistics of the coping and emotional response regression analysis.

								95% C.I.for EXP(B)	
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Step 1[a]	GSAQ Total Avoidance	.020	.024	.688	1	.407	1.020	.973	1.070
	PCI Proactive Coping	.048	.036	1.846	1	.174	1.049	.979	1.125
	CSQ3 Detached	-.037	.027	1.800	1	.180	.964	.914	1.017
	I-RS Rumination	.119	.052	5.308	1	.021	1.127	1.018	1.247
	Constant	-2.966	1.800	2.716	1	.099	.051		

The full model accurately predicted self-harm status (omnibus $\chi^2 = 16.948$, $df = 4$, $p = .002$). The model accounted for between 9.4% and 13.1% in self-harm status. Overall 72.1% of cases were predicted accurately with 94% of non self-harmers predicted accurately and 25.5% of self-harmers predicted accurately. The model indicates that only rumination predicted self-harm status significantly ($p = .021$) and for each unit of increase in rumination, self-harm status increased by a factor of 1.127 (95%CI 1.018 – 1.247).

Finally only the GSAQ multidimensional avoidance scales were entered into the model to test the role of avoidance coping dimensions, specifically in deliberate self-harm. The results reported in Table 32 indicate that avoidance coping dimensions do not accurately predict self-harm status in this sample (omnibus $\chi^2 = 2.523$, $df = 3$, $p = .471$). The model accounted for between 1.5% and 2% in self-harm status. Only 1.8% of self-harm cases were accurately predicted and 100% of non-self-harm cases. Overall the model predicted 62.6% of cases accurately.

Table 32: Summary statistics for multidimensional avoidance coping.

								95% C.I.for EXP(B)	
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Step 1[a]	GSAQ General Avoidance	.048	.043	1.229	1	.268	1.049	.964	1.141
	GSAQ Emotional Avoidance	-.034	.065	.269	1	.604	.967	.852	1.098
	GSAQ Conflict Avoidance	.022	.092	.057	1	.811	1.022	.853	1.225
	Constant	-.945	.434	4.740	1	.029	.389		

6.5 Discussion and Conclusions

The prevalence of self-harm reported in this chapter replicates findings in earlier reports using student samples and also research using the DSHI to obtain self-harm data (for example: Borrill, *et al*., 2009; Brown, *et al*., 2007; Gratz, 2001). Despite the limited research on coping strategies and deliberate self-harm in non-clinical samples, the evidence overall suggested that experiential avoidance and deliberate self-harm help the individual to escape from unwanted emotional experiences (Chapman, *et al*., 2006).

Although the results reported in this chapter do indicate that broad emotional response style does indeed have some role in self-harm, there were no effects for avoidance coping measured by the GSAQ. Rumination emerged as a key factor in both the sample mean difference tests as well as the predictive regression analyses, with significant differences reported between self-harmers (SH) and non-self-harmers (NoSH) as well as differences between recent self-harmers (within the past year: 0YSH) and those who last attempted self-harm more than a year ago (1YSH). Rumination measures the tendency to be preoccupied with thoughts about past or future emotional upset, and individuals who tend to ruminate are less likely to be able to detach their emotions from events than those who don't – in other words, they are less likely to maintain perspective and thus more sensitive to negative emotional cues (Roger, *et al*., 2011). Owing to the predominance of Rumination,

Detached Coping was not a significant predictor when included together with Rumination in the regressions, but in a subsidiary selective analysis (not reported) in which Rumination was excluded, Detached Coping did indeed emerge as the only other significant predictor of self-harm.

Although the NoSH (no-self-harm) group reported higher Detached Coping and lower Rumination scores than both the 0YSH (self-harm within the past year) and 1YSH (self-harm more than a year ago) groups, there were in fact no significant differences between the 0YSH and 1YSH groups on either scale. Self-harm status as reported in this thesis reflects mainly historical self-harm attempts, and although speculative, this could perhaps mean that individuals who have harmed themselves the last time a few years ago may have obtained therapy or other help and may have acquired more appropriate coping strategies which may have had and effect on the outcome of the analysis.

Contrary to expectations, none of the avoidance coping dimensions discriminated significantly between the self-harm and non-self-harm groups. There were also no significant differences in avoidance coping on any of the avoidance subscales between the two non-self-harm sub-groups and self-harm subsample based on ANOVA. One possible reason might be that despite significant differences between self-harmers and those who reported no self-harm in terms of depression, anxiety and stress, the greater majority of participants scored within the normal range on the DASS21, and only four participants in the total sample scored within the mild to moderate range as defined in the arbitrarily selected DASS severity levels (Lovibond & Lovibond, 1995). None of the participants scored within the severe to extremely severe DASS range. This suggests that the sample may not have had additional diagnosable conditions in the form of depression, anxiety and stress, and although self-harmers overall scored higher on the GSAQ avoidance dimensions than those who have not harmed themselves, the effect of avoidance was not as pronounced as it might perhaps be in clinical samples with more severe diagnosis.

Although Chapman, *et al*. (2005) also found no significant relationship between avoidance coping and deliberate self-harm, using a general index of avoidance, Borrill, *et al*. (2011) found that avoidance coping was a significant predictor of repeated self-harm attempts. The differences between self-harm and non-self-harm groups on the same single-dimension avoidance coping scale were also significant in a study by Borrill, *et al*. (2009). These authors also reported a significant relationships between self-harm and both Rumination and Detached Coping. The present study replicated the findings for Rumination in particular but not for any of the GSAQ Avoidance Coping measures. The reasons for the discrepancies in the findings reported by different studies remains unclear, particularly since both of the Borrill *et al*. (2009, 2011) papers were also based on non-clinical samples. Studies using the GSAQ and including clinical samples should offer important insights into the role of the different avoidance coping dimensions in self-harming behaviour, and provides a clear avenue for further research.

One of the limitations of the analyses reported in this chapter is that the subsamples used to compare multiple and single self-harm attempts might have been too small to provide reliable statistics. The data analysis relied on self-reported disclosure and historical self-harm data in most cases, and the sample contained very few individuals who had indicated that they had engaged in self-harm in the past year; the samples were also very strongly gender-biased, with very few males included in them. The overall trends nonetheless suggested that those who reported self-harm did score higher on the avoidance subscales than those who had not self-harmed, and although the samples were overall clearly non-clinical, the self-harm sample did obtain significantly higher levels of depression, anxiety and stress compared to the sample that have not harmed themselves. Coping dimensions were not assessed 'at the time of presenting with self-harm' and were largely retrospective, and different patterns or relationships could emerge if depression, anxiety, stress and coping are measured closer to the time of self-harm. Although the findings for avoidance coping overall were not significant, further research with clinical samples offer an important avenue for further work with the GSAQ scales.

Chapter 7: Avoidance Coping and Cardiovascular Activity in Response to Laboratory-Manipulated Conflict Scenarios

7.1 Introduction

Chapter 1: Introduction and Literature Review in this thesis provided a brief reference to the link between stress and illness mediated by so-called stress hormones like adrenalin (and noradrenalin) and cortisol, which function via two main pathways: the Sympathetic Nervous System (SNS) and the Hypothalamic Pituitary Adrenal (HPA) axis, respectively (Adameova, *et al.*, 2009; Franken, 1988; Lovejoy, 2006; Roger & Najaran, 1998). Increases in adrenaline and cortisol facilitate the 'fight or flight' process and are adaptive mechanisms that are not necessarily associated with stress. However, since activation of the SNS leads to elevated heart rate and blood pressure, sustained elevations can have significant implications for health. The same is true for the HPA axis: sustained elevations in cortisol can eventually compromise immune function (Dickerson & Zoccola, 2009). A detailed description of the SNS and HPA-axis responses to stress is beyond the scope of this thesis, but a brief summary provides an appropriate context for this chapter in particular, which focuses on physiological responses to a laboratory manipulation of conflict.

The SNS originates in the posterior hypothalamus (Foley & Kirschbaum, 2010), and in phase one of the stress response the SNS activates the adrenal medulla to secrete adrenalin and noradrenaline. Adrenalin is the primary catecholamine released from the chromaffin cells of the adrenal medulla while noradrenalin is mostly released from neural terminals, and there is some evidence that adrenal medullary activation is more related to emotional stress and neural terminal activation more related to physical workload (Lovejoy, 2006). During phase two, a few minutes later, a cascade of events originates from the medial hypothalamus secreting corticotropin releasing hormone (CRH), which in turn stimulates the pituitary gland to secrete adrenocorticotropic hormone or ACTH (Foley & Kirschbaum, 2010; Kingsley, 1996; Lovejoy, 2006). ACTH stimulates the adrenal cortex to secrete glucocorticoids (cortisol) (Bear, Connors, & Paradiso, 2009;

Kingsley, 1996), which regulates glucose metabolism to provide the energy to respond to demand (Lovejoy, 2006).

These neuroendocrine processes provide an essential short-term adaptation to demand, but chronic activation can lead to the suppression of components of the immune system, damage the hippocampal neurons, and increased depressive symptomatology (Dickerson & Zoccola, 2009). Sustained high levels of these hormones have also been linked to high blood pressure, elevated cholesterol and other indicators of cardiovascular disease and diabetes (Dickerson & Zoccola, 2009). Extended reviews of the role of these processes in the stress response and resilience can be found in Arnsten (2009) and Feder, *et al*. (2009).

In Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms, it was shown that the three avoidance coping factors from the GSAQ related differentially to a range of measures, including depression, anxiety and stress, as well as the reporting of physical symptoms associated with psychological distress and the reporting these symptoms to a doctor. The General Avoidance and Conflict Avoidance factors appeared to be the most important components, and it was noted in these chapters that the results resonated with previous reports indicating that avoidance could be beneficial in the short-term, but deleterious in the long-term. This chapter will explore the role of avoidance coping in moderating the physiological response to an experimental laboratory stressor in a non-clinical sample, using cardiovascular activity as the dependent measure. The stress manipulation involves exposure to conflict and non-conflict video clips, and the analyses will focus primarily on the Conflict Avoidance factor from the GSAQ.

The findings from studies investigating the role of stress in moderating cardiovascular activity have been equivocal, in part owing to differences between laboratory and naturalistic settings and chronic versus acute stressors. However, individual differences also need to be taken into account when investigating cardiovascular responses (see for example Matthews, Owens, Allen & Stoney, 1992; Shubert, Lambertz, Nelesen, Bardwell, Choi & Dimsdale, 2009; Van Egeren

& Sparrow, 1989), and relatively few studies have explored the moderating role of adaptive psychosocial factors and coping (for example, Martin, Doster, Critelli, Purdum, Powers, Lambert & Miranda, 2011; Nyklíček & Vingerhoets, 2009). Using the Revised Ways of Coping Questionnaire (WCQ-R, Folkman & Lazarus, 1988), Fontana and McLaughlin (1998) found that an increased use of emotion-focused coping (tension reduction and positive reappraisal) was correlated with lower levels of baseline heart rate. Distancing was associated with higher levels of systolic blood pressure reactivity during a laboratory conflict task in the same study, using a small sample (N = 33) of normotensive undergraduate women with a mean age of 18.20 years (SD = 0.48).

Based on the results the authors suggested that the use of tension reduction and positive reappraisal was effective in lowering baseline heart rate levels. No significant effects were found for these coping processes on blood pressure levels, but using a Dutch version of the COPE (Carver, *et al*., 1989) questionnaire, Nyklíček & Vingerhoets (2009), reported that positive reinterpretation of situations was related to a more favourable blood pressure level in a large sample of 985 female and 777 male participants aged between 20 – 55 years. The authors controlled for other factors, including age, marital status, socio-economic status, body mass index, parental history of hypertension, physical exercise, smoking, alcohol, coffee and, in the case of women, oral contraceptive use. The authors point out that the appraisal of a stressor and its consequences is an important factor in determining physiological responses, although this study assessed general coping and general cardiac output rather than directly assessing coping responses to a specific stressor and resulting cardiovascular activity.

Schwerdtfeger, Schmukle and Egloff (2005) concluded that parental hypertension and avoidant coping were the best predictors of rate pressure product (RPP) reactivity to a laboratory speech task in a sample of 55 healthy female students aged between 20 – 42 years. The RPP was calculated by multiplying systolic blood pressure (SBP) by heart rate (HR), and coping was assessed with the German version of the Mainz Coping Inventory (MCI - Krohne, *et al*., 2000). The authors reported no significant results for diastolic blood pressure (DBP), and note that the

results are limited to the RPP measure which is an index of cardiac workload. In another study using the COPE (Carver, *et al*., 1989) questionnaire, Martin, *et al*. (2011) found that coping moderated the relationship between Type D personality and heart rate variability in two large samples (N = 501 and N = 274) of undergraduates. The authors note that Type Ds who use avoidance to cope with stress may be at greater risk of unhealthy outcomes, and they reiterate the point made earlier in this thesis that although avoidance coping may decrease discomfort and physiological arousal in the short term, these strategies may increase risk in the long term and lead to more severe consequences.

The brief overview above of the SNS and HPA axis and the potential moderating role of individual differences such as avoidance coping in the stress response provides a justification for the inclusion of measures of psychological and physical health in this project. The use of cognitive or other forms of avoidance hinder emotional processing of fears and negative responses to events and are regarded as maladaptive coping strategies (Rachman, 1980; Rodriguez & Craske, 1993; Sexton & Dugas, 2008). Both blood pressure and heart rate can be determined by means of relatively simple, non-invasive techniques, and these measures of physiological responding are incorporated in this chapter to assess the role of avoidance coping in moderating cardiovascular activity in response to an experimental stressor.

Referring to the moderating role of avoidance coping in the stressor-strain response discussed in Chapter 1: Introduction and Literature Review, it is likely that individuals who score higher on avoidance coping will perceive the conflict video used in this study differently to low avoiders. In the absence of unequivocal findings or evidence in the literature an explicit directional hypothesis would be inappropriate, but it was generally expected that people who report higher levels of avoidance coping would indicate that they found the conflict situations depicted in the video clip more stressful, and that they would subsequently respond physiologically differently from people who report lower levels of avoidance coping.

In common with many studies using physiological indices, the samples used in this study are smaller than those used in the construction and validation of the GSAQ. Most studies measuring cardiovascular activity compare baseline and task-related systolic blood pressure (SBP), diastolic blood pressure (DPB) and heart rate (HR), but in this chapter these measures are further explored in terms of the differences in SBP, DBP and HR between the baseline measures and experimental condition-related SBP, DBP and HR measurements. The difference between high and low avoiders is assessed in terms of cardiovascular activity based on the percentage change in cardiovascular activity, which allows for a more meaningful indication of reactivity compared to only mean SBP, DBP and HR measures during the experimental conditions.

7.2 Participants

The sample for the study comprised students recruited on a voluntary basis from the Manukau Institute of Technology (MIT - Auckland, New Zealand) Student Career Centre, as well as being announced in class by lecturers using a handout and electronically via the Institute's e-learning system. Initially participants were offered entry into a prize draw to win one of three iPod 2GBs, but after consultation with other researchers this was changed to a cash incentive to increase participation rates. Approval was obtained from both the University of Canterbury Human Ethics Committee and the Manukau Institute of Technology Ethics Committee to offer a NZ$30.00 inducement to participants, and those who had taken part prior to the change were contacted and compensated with the NZ$30.00 payment.

Using this strategy, 57 individuals expressed an interest, with 35 individuals eventually taking part in the research. Three participants' overall results could not be used owing to technical difficulties with the blood pressure meter cuff not fitting adequately (n = 2), or not following the research protocol correctly (n = 1). These participants did nonetheless respond to the other questions, and received compensation for their participation. The remaining 32 participants' data could be used for the cardiovascular analysis reported in this chapter, and the final sample comprised 15 males aged between 20 and 46 years (M = 24.53; SD = 7.45) and 17

females aged between 20 and 50 years (M = 28.06; SD = 8.38). The students came from a variety of disciplines, including business, management, engineering, mechatronics, psychology and education. Most (78%) of the sample indicated that they are full-time undergraduate students. The sample was ethnically diverse and largely representative of the students at MIT, with the majority indicating that they were Indian, Maori or European, with a few from other Pacific backgrounds.

7.3 Materials

7.3.1 Questionnaires

The set of questionnaires and documents included a briefing and attached informed consent form, a demographics questionnaire, the GSAQ, a post-video questionnaire, a debriefing form, and a heart rate and blood pressure data form.

The briefing form described the experiment and provided an ethics statement as well as the researcher and research supervisor's contact details. The briefing stated that the experiment aims to assess the differences in opinions between different generations and genders relating to the appropriateness of certain videos being freely available on the internet or television. After reading this document, participants could ask questions and sign the informed consent form, which was kept separate from their experimental data to ensure confidentiality. The remaining forms were only distinguished by a random participant number in order to collate the data from the various forms but to keep personal details confidential and anonymous during data analysis. The demographics form collected participants' gender, age, ethnicity, highest level of education, whether they are taking any medication and whether they have any medical conditions the researcher should be aware of. Participants also completed the GSAQ developed during this thesis. The true nature of the experiment was explained in the debriefing form and more information was provided about coping and health.

The researcher completed the heart rate and blood pressure form during the experiment by noting the physiological measures during the experimental

conditions out of sight of the participants. This data was subsequently shown to the participants and discussed during the debriefing.

The post-video questionnaire collected data about participants' experiences and opinions of the videos that they viewed as part of the experiment, and whether they had seen the clips before. Participants were also asked how stressful they found the videos (1 = not at all stressful and 10 = very stressful) and how stressed they would feel had they been in a similar situation rather than only watching it on a video (1 = not at all stressed and 10 = very stressed). See Appendix 13: Briefing form, questionnaires and debrief used during the Cardiovascular study for examples of the forms and assessments completed during this study.

7.3.2 Physiological reactivity

Cardiovascular reactivity measures were obtained using an OMRON HEM 7203 clinically validated automatic blood pressure monitor. The apparatus provided systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) readings. For each blood pressure and heart rate reading participants were asked to relax their left arm in the same position on the desk as during the baseline measure, with the latex free cuff above the elbow and at approximately heart level. Blood pressure was measured as the standard millimetre of mercury (mmHg) and heart rate as beats per minute (bpm). These measurements were entered into the heart rate and blood pressure form by the researcher.

7.3.3 Videos viewed during the experiment

Clips were obtained from a variety of sources, for example training videos, YouTube, reality television shows and reviewed by the researcher to select a number of short clips depicting conflict and non-conflict situations. After narrowing down the wide selection of video clips the researcher and research supervisors agreed on two potential video clips, one conflict situation and one neutral non-conflict situation of approximately 60 seconds in duration each. A sample of independent participants (N = 14) from a range of backgrounds were

asked to view the videos online via a shared drive (Google Drive) and to rate both videos via a secure anonymous online survey based on Question 6 in the questionnaire used during the laboratory study: "How stressful did you find this video", on a scale of 1 (not stressful at all) to 10 (very stressful). Six people responded, two males and four females. The sample ranged between 29 and 66 years in age (M = 37.67; SD = 14.07). Although the sample was too small to test the differences between males and females reliably, all participants rated the conflict video clip as more stressful. A paired samples t-test indicated that respondents rated the conflict video (M = 6.67; SD = 1.21) highly significantly (t = -10.826, df = 5, $p < 0.0001$, one-tailed) more stressful than the non-conflict (M = 1.50; SD = 0.84) video clip.

The two videos selected for this experiment included a clip from a friendly public conversation between two people about an experiment one of them did as a child (TED.com, 2002); this was the neutral, no-conflict video. The conflict video clip was from an episode of the television programme, The Apprentice (Season 5, Episode 13, Trump Productions & Mark Burnett Productions, 2006), where two of the contestants had a heated public argument about the projects they had managed. These videos were selected to induce the coping response related to conflict versus no conflict. The videos were viewed on a laptop computer and the clip viewing order was reversed for every other participant to reduce potential order effects.

7.4 Procedure

The experiment was conducted in an office setting, and on arrival participants were asked to sit behind a desk facing a laptop computer. To gauge any prior knowledge of the procedure and to ensure that participants had read and understood the briefing information sheet advertising the research, they were asked how much they knew about the experiment, and all participants indicated that they did not know more about the experiment than what they had read in the pre-briefing information sheet. Participants were told that the experiment aimed to assess generational and gender differences in opinions about the appropriateness of certain videos being freely available on the internet or television. They would have to complete a few

questionnaires and questions about two video clips, and during the experiment their blood pressure and heart rate would be measured. The lighting in the air-conditioned room was ambient and the researcher allowed participants to read through the briefing document and sign the consent form before taking part in the project, which required approximately 30 minutes of their time.

After completing the consent form, participants were informed that from that point all results would be anonymous. Participants were asked to complete the GSAQ and the first baseline blood pressure and heart rate readings were taken, using an OMRON HEM 7203 blood pressure monitor as described. Two video clips of one minute each were then shown on the laptop computer, and after every video, participants' blood pressure and heart rate were measured again. For each blood pressure and heart rate reading participants were asked to relax their left arm in the same position on the desk as during the baseline measure, with the latex free cuff above the elbow and at approximately heart level.

After viewing the two video clips, participants were asked to complete a short demographics form and to complete the questionnaire about the video clips. Participants were again informed that there are no right or wrong answers. After completing the demographics form, and questionnaire about the video clips, a final blood pressure and heart rate reading was taken.

Participants were debriefed about the true nature of the experiment and their blood pressure and heart rate readings were explained in terms of the chart provided via the OMRON website. Participants were then asked to read through the debrief sheet and ask the researcher any questions if they had any (see the debrief document in Appendix 13: Briefing form, questionnaires and debrief used during the Cardiovascular study). All participants were compensated with NZ$30.00 via ASB Mobile Banking or paid in cash if they did not have a mobile phone number, email address or bank account.

7.5 Results

7.5.1 Data Treatment

The study focused mainly on the change in cardiovascular activity between the baseline, conflict video, neutral video, and debrief measurements. Change in cardiovascular activity was calculated as a percentage change from the baseline measure for systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) for the conflict video, neutral video and debrief parts of the experiment. High and low avoiders were subsequently compared on these changes in cardiovascular activity by assigning high avoiders to those who scored above the scale midpoint and low avoiders as those who scored below the scale midpoint.

7.5.2 Manipulation Check

Question 6 in the post video questionnaire was used to assess whether participants perceived the conflict video more stressful than the neutral video. The results indicated that this was indeed the case (M = 3.66; SD = 2.29) (M = 1.41; SD = 0.98) (t = 6.364, df = 31, $p < 0.001$, two-tailed), confirming the responses from the small independent sample who responded to the same question prior to conducting the study. Question 7 asked how stressful participants would find these situations if they were actually in them rather than merely observing them on a computer screen. The mean levels of subjective stress reported was significantly different (t = 9.055, df = 31, $p < 0.001$, two-tailed), with the rating of actually being in the situation depicted in the conflict video (M = 6.97; SD = 2.62) higher than being in the situation depicted in the neutral video (M = 2.41; SD = 2.42).

7.5.3 High and Low Avoider Groups

Independent-sample t-tests were used to test whether there were differences between high and low avoiders' cardiovascular activity and also their ratings on selected questions in the post video questionnaire. The sections below briefly report these findings for General Avoidance, Emotional Avoidance and Conflict

Avoidance, and where appropriate, Levene's test for the equality of variances in different samples will be noted. The percentage difference in the blood pressure and heart rate readings between the baseline and experimental conditions are also reported. All high and low avoider groups differed significantly at the $p < 0.001$ level in terms of mean scale scores for the total GSAQ, General Avoidance, Emotional Avoidance and Conflict Avoidance scales. Relatively few individuals scored above the scale midpoints, which is not surprising given the non-clinical sample, and the subsamples used in the analysis were consequently fairly small. In the interests of brevity only significant differences will be reported, and these are summarised in Table 33.

Table 33: Summary of statistically significantly different sample means and standard deviations for high and low avoiders on the three GSAQ scales

GSAQ Scale	Variable	High Avoiders (SD)	Low Avoiders (SD)	*p*	Levene's
General		15.38 (3.20)	4.67 (3.52)	<.001	na
	Conflict Video SBP	121.25 (7.67)	131.88 (11.94)	<.05	na
	Conflict Video DBP	72.13 (9.73)	80.38 (8.07)	<.05	na
	Conflict: Stressed if in similar situations	8.75 (1.67)	6.38 (2.63)	<.05	na
	Conflict: Have been in similar situations	3.13 (0.64)	2.38 (0.97)	0.051	na
	Neutral: Have been in similar situations	3.00 (1.31)	2.04 (1.00)	<.05	na
Emotional		8.42 (1.61)	2.75 (1.28)	<.001	na
	Conflict Video SBP	126.33 (10.91)	137.88 (10.87)	<.05	na
	Neutral Video SBP	127.00 (10.95)	140.13 (8.13)	<.01	na
	Debrief SBP	126.08 (9.32)	140.38 (12.00)	<.01	na
	Debrief DBP	77.79 (6.74)	85.25 (4.71)	<.01	<.05
Conflict		5.80 (0.79)	1.66 (1.46)	<.001	na
	Conflict: Stressed if in similar situations	8.50 (1.72)	6.27 (2.69)	<.05	na

High General Avoiders: $n = 8$; Low General Avoiders: $n = 24$
High Emotional Avoiders: $n = 24$; Low Emotional Avoiders: $n = 8$
High Conflict Avoiders: $n = 10$; Low Conflict Avoiders: $n = 22$

7.5.4 General Avoidance group differences

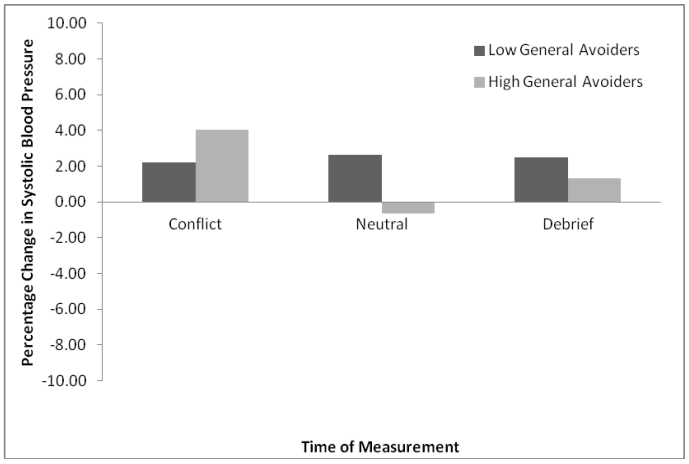
Eight participants (M = 15.38; SD = 3.20) scored above the General Avoidance scale midpoint and significantly higher (t = -7.601, df = 30, $p < 0.001$) than the twenty-four (M = 4.67; SD = 3.52) who scored below the midpoint. High (M = 121.25; SD = 7.67) general avoiders' systolic blood pressure was significantly lower than low (M = 131.88; SD = 11.94) general avoiders after viewing the conflict video (t = 2.347, df = 30, $p < 0.05$, two-tailed). High (M = 72.13; SD = 9.73) avoiders also exhibited lower diastolic blood pressure after viewing the conflict video than the low (M = 80.38; SD = 8.07) avoiders (t = 2.380, df = 29, $p < 0.05$, two-tailed).

Although high and low avoiders reported no significant differences in how stressed they felt while watching the conflict video, high (M = 8.75; SD = 1.67) avoiders did indicate in post video question 7 that they would feel significantly (t = -2.381, df = 30, $p < 0.05$, two-tailed) more stressed than low (M = 6.38; SD = 2.63) general avoiders if they were to find themselves in such a situation. Based on the responses to post video question 9, high (M = 3.13; SD = 0.64) general avoiders indicated that they had found themselves significantly more in situations such as the one depicted in the conflict video compared to low (M = 2.38; SD = 0.97) general avoiders (t = -2.033, df = 30, p = 0.051, two-tailed). General high (M = 3.00; SD = 1.31) avoiders also indicated that they have found themselves significantly more in situations depicted in the neutral video (t = -2.175, df = 30, $p < 0.05$, two-tailed) compared to low (M = 2.04; SD = 1.00) general avoiders.

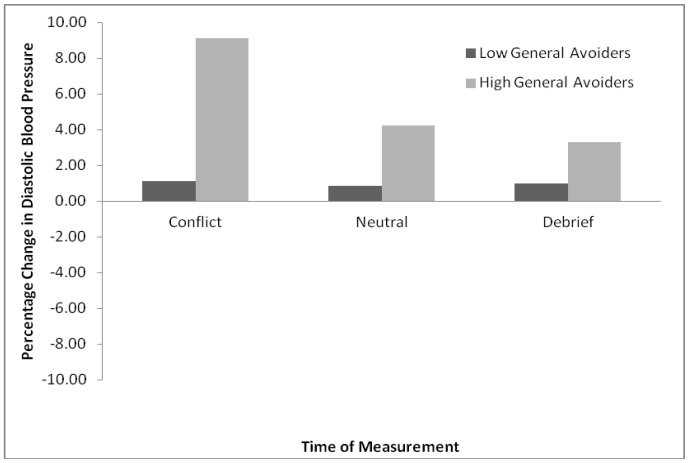
Although the differences were not significant at the $p < 0.10$ level it appears the high general avoiders had a larger mean percentage change in systolic blood pressure from baseline to conflict video than low general avoiders, and also a larger percentage change in diastolic blood pressure between baseline and the conflict video measurement. A similar trend emerged for heart rate from base to conflict video heart rate. Figure 3 presents the percentage change in SBP, DBP and HR between the base measure and conflict video, neutral video and debrief (recovery) for the high and low General Avoidance groups.

Figure 3: Percentage change in a). Systolic Blood Pressure, b) Diastolic Blood Pressure and c). Heart Rate for High and Low General Avoiders.

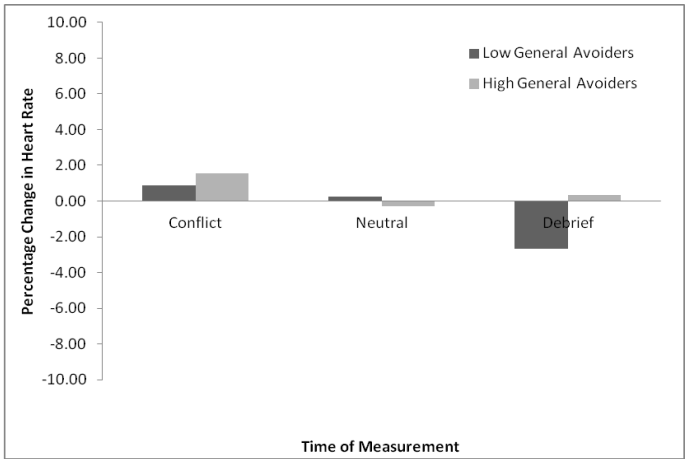
a.



b.



c.



7.5.5 Emotional Avoidance group differences

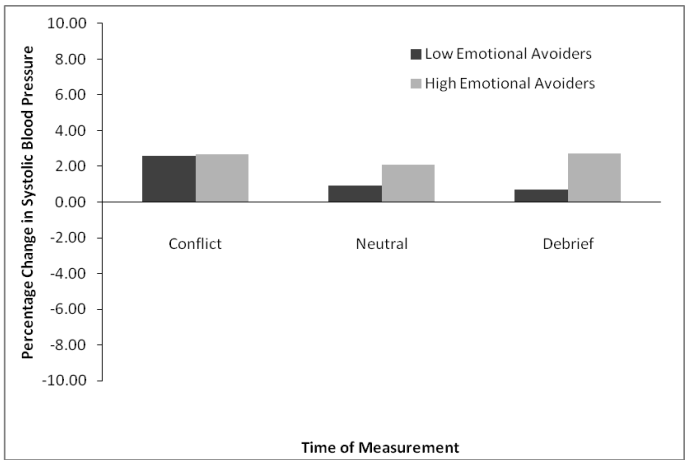
In contrast to both General Avoidance and Conflict Avoidance, eight participants (M = 2.75; SD = 1.28) scored lower than the scale midpoint on Emotional Avoidance and twenty-four (M = 8.42; SD = 1.61) scored above the midpoint (and significantly lower: t = -9.002, df = 30, $p < 0.001$). Low (M = 137.88; SD = 10.87) emotional avoiders obtained higher systolic blood pressure after watching the conflict video than high (M = 126.33; SD = 10.91) emotional avoiders (t = 2.593, df = 30, $p < 0.05$, two-tailed). High (M = 127.00; SD = 10.95) emotional avoiders also obtained lower systolic blood pressure than low (M = 140.13; SD = 8.13) emotional avoiders after watching the neutral video clip (t = 3.102, df = 30, $p < 0.01$, two-tailed). Debrief systolic and diastolic blood pressure differences were also both significant (t = 3.496, df = 30, p = 0.001, two-tailed and t = 3.451, df = 17.354, p = 0.003, two-tailed, Levene's p = 0.040). In both instances high emotional avoiders indicated lower systolic (M = 126.08; SD = 9.32 versus M = 140.38; SD = 12.00) and diastolic (M = 77.79; SD = 6.74 versus M = 85.25; SD = 4.71) blood pressure than low emotional avoiders.

None of the blood pressure percentage changes from baseline to conflict video, neutral video or debrief were significant. However, the percentage change from baseline to debrief heart rate approached significance (t = -1.944, df = 30, p = 0.061, two-tailed) with low emotional avoiders (M = -7.56; SD = 14.33) obtaining a greater percentage change in heart rate from base to debrief than high emotional avoiders (M = -0.03; SD = 7.41).

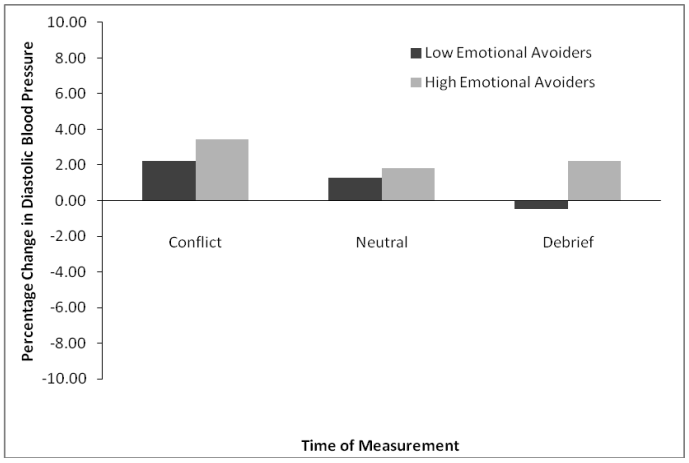
Figure 4 presents the percentage change in SBP, DBP and HR between the base measure and conflict video, neutral video and debrief (recovery) for the high and low General Avoidance groups.

Figure 4: Percentage change in a). Systolic Blood Pressure, b) Diastolic Blood Pressure and c). Heart Rate High and Low Emotional Avoiders.

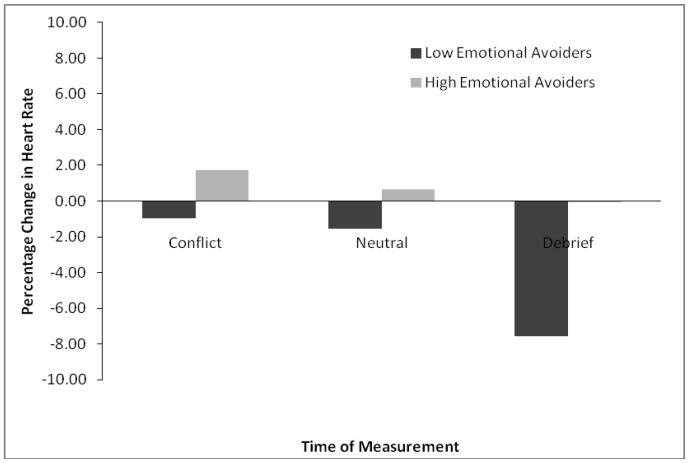
a.



b.



c.



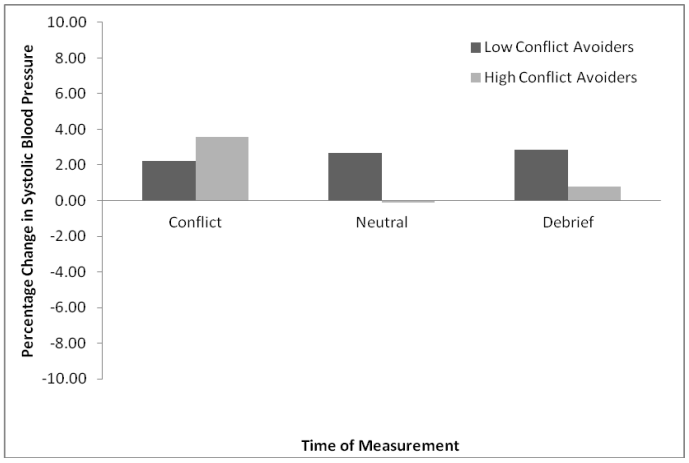
7.5.6 Conflict Avoidance group differences

There were 10 high (M = 5.80; SD = 0.79) Conflict Avoidance participants who scored above the scale midpoint and significantly higher (t = -8.333, df = 30, p < 0.001) on Conflict Avoidance than the 22 (M = 1.68; SD = 1.46) participants who scored below the scale midpoint.

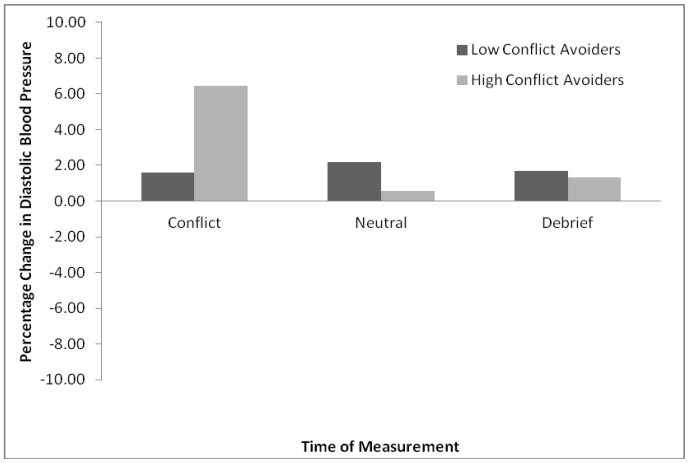
None of the comparisons between the high and low Conflict Avoidance groups yielded statistically significant differences, apart from question 7 in the post video questionnaire which asked participants to rate how stressful they would find being in a situation similar to those presented in the two video clips. High (M = 8.50; SD = 1.72) conflict avoiders indicated that they would feel significantly (t = -2.392, df = 30, p < 0.05, two-tailed) more stressed if they were in a situation similar to the one displayed in the conflict video compared to low (M = 6.27; SD = 2.69) conflict avoiders. Although not significant, high conflict avoiders (SBP: M = 3.59; SD = 4.25 and DBP: M = 6.43; SD = 13.11) obtained a larger percentage change in systolic (t = -0.593, df = 30, p = 0.557, two-tailed) and diastolic (t = -1.076, df = 30, p = 0.290, two-tailed) blood pressure from base to post conflict video compared to the low conflict avoiders group (SBP: M = 2.24; SD = 6.57 and DBP: 1.61; SD = 11.11). Figure 5 presents the percentage change in SBP, DBP and HR between the base measure and conflict video, neutral video and debrief (recovery) for the high and low Conflict Avoidance groups.

Figure 5: Percentage change in a). Systolic Blood Pressure, b) Diastolic Blood Pressure and c). Heart Rate for High and Low Conflict Avoiders.

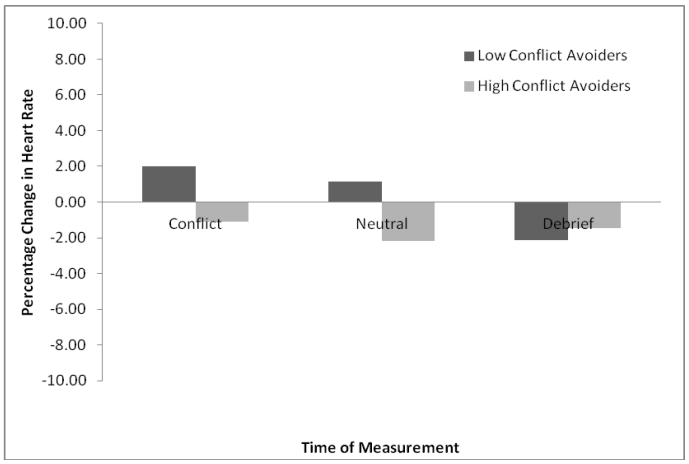
a.



b.



c.



7.5.7 Subsidiary Analysis

In order to explore the findings in more detail, a number of subsidiary analyses were performed on the data, and these are briefly described in the following sections.

7.5.7.1 Gender differences

Differences in avoidance behaviour between males and females have been shown earlier in the thesis. The sample for the study reported in this chapter consisted of approximately even numbers of males and females, and although the subsamples were too small to allow two-way (Gender x Scale Score) analyses, gender differences in cardiovascular responses were nonetheless tested for. There were no statistically significant differences in cardiovascular activity between males and females in this sample, apart from the debrief DPB (t = -2.429, df = 30, $p < 0.05$, two-tailed) (Males: M = 76.67; SD = 7.07 and Females: M = 82.29; SD = 6.04). The only significant difference (t = -2.670, df = 20.118, $p < 0.05$, two-tailed, Levene's p = 0.032) between males and females on the post video questionnaire was question 12: *"How often do you think this type of interaction happens in real life?"* with females (M = 9.12; SD = 1.27) indicating that they think conflict situations such as the one depicted in the interpersonal conflict video take place more often than males (M = 7.20; SD = 2.51). These two differences are probably spurious and are unlikely to represent reliable findings.

7.5.7.2 Cardiovascular activity line graphs

Although the focus of this chapter is on changes in cardiovascular activity, line graphs were also generated representing cardiovascular trends exhibited by the high and low avoider groups based on mean blood pressure and heart rate measurements obtained during the different experimental conditions.

The line graphs were essentially a different way of presenting the same results shown in the bar graphs, and in the interests of brevity they have not been included

in the thesis, but one noteworthy trend was that in all instances, high avoiders obtained on average lower SBP and DBP during the experimental conditions than low avoiders; however, the relationship was reversed for HR, with low avoiders obtaining lower HR than high avoiders across the experimental conditions. The trends also suggested that low avoiders exhibited less erratic cardiovascular activity than high avoiders across conditions. Another trend was a tendency for SBP and DBP to be lower in both groups after viewing the conflict video clip compared to the neutral non-conflict video clip across the GSAQ scales. Finally, for the General Avoidance and Conflict Avoidance constructs especially, it would appear that high avoiders showed a larger drop in the mean SBP and DBP after viewing the conflict video compared to the period after viewing the neutral non-conflict video.

7.6 Discussion and Conclusions

The introduction to the thesis and to this chapter referred to evidence linking stress to psychological as well as physical health. The aim of this chapter was to test the moderating role of coping, and more specifically avoidance coping as measured with the GSAQ, in cardiovascular activity. The brief literature review indicated previous research linking stress to cardiovascular activity, but with mixed results which could be ascribed to differences in sample sizes, sample specificity, and individual variables such as coping. Later studies which did include coping have indicated some effect on the cardiovascular response (see Fontana & McLaughlin, 1998; Martin, *et al*., 2011; Nyklíček & Vingerhoets, 2009; Schwerdtfeger, *et al*., 2005).

The present study used a conflict/non-conflict video manipulation to investigate the moderating role of coping on heart-rate and blood pressure. Manipulation checks indicated that the conflict video used in the experiment was experienced as significantly more stressful than the neutral video, based on participants' mean response scores given in the post-video questionnaire. Participants also indicated that they would be significantly more stressed if they were actually in the situation depicted in the conflict video compared to that depicted in the neutral video. Interestingly, for both high and low avoiders the mean level of subjective stress

reported for being in the conflict situation shown in the video was almost double that of just viewing the video.

Sections 7.6.1, 7.6.2 and 7.6.3 below will summarise the findings for each of the GSAQ scales, followed by a section on overall conclusions from the study.

7.6.1 General Avoidance

Although general high avoiders rated the conflict video as more stressful than general low avoiders did, the difference was not statistically significant. However, general high avoiders scored significantly higher on subjective stress had they been in the situation rather than only watching it. General high avoiders also indicated that they had been in the situations depicted by the conflict and neutral videos more often than low general avoiders have. Although there were no significant differences between low and high general avoiders in relation to changes in SBP, DBP and HR, low general avoiders obtained statistically significantly higher SBP and DBP than high general avoiders after viewing the conflict video.

SBP and DPB were higher for low general avoiders than for high general avoiders, but high general avoiders' SBP and DBP seemed more erratic: for high general avoiders there was a relatively sharp drop in SBP and DBP from baseline to the period after viewing the conflict video, but less so after viewing the neutral video compared to the smaller drop in SBP and DBP for low general avoiders. The trend seemed similar for heart rate, but in this instance high general avoiders, overall, had a higher heart rate than low general avoiders. It is interesting to note that - although not statistically significant - in both groups there appears to be a drop in blood pressure and heart rate after viewing the conflict video and smaller drop closer to base levels after viewing the neutral video.

This would seem to contradict the view that stress increases blood pressure and heart rate, and that low stress decreases heart rate and blood pressure, but the findings do echo those reported by Fontana and McLaughlin (1998), who showed that distancing was associated with higher levels of systolic blood pressure

reactivity during a laboratory conflict task. These authors did not find any significant effects on blood pressure levels, but in the current chapter there was a significant difference between high and low general avoiders' SBP and DBP after viewing the conflict video, while none of the other SBP and DBP or heart rate measures was statistically significantly different.

7.6.2 Emotional Avoidance

For emotional avoiders, the high versus low subsample size ratios based on the scale midpoints were reversed. There were more statistically significant cardiovascular results than for either General or Conflict Avoidance, but interestingly, no differences in terms of how stressed participants would feel had they been in the situations depicted in the videos. High emotional avoiders obtained statistically significantly lower SBP than low emotional avoiders after viewing the conflict video, neutral video and at the debriefing. Apart from a non-significant difference in DBP after viewing the conflict video the results were similar for DBP, and the difference in DBP after viewing the neutral video only approached significance at ($p = 0.06$).

No statistically significant heart rate differences were reported at the different measurement points, although the percentage change in heart rate from baseline to debrief approached statistical significance ($p = 0.061$), with low emotional avoiders indicating a larger percentage difference in heart rate from baseline to debrief compared to high emotional avoiders. Low emotional avoiders indicated a sharp increase in heart rate during the debriefing compared to baseline and after the two video clips. For these groups, again, low avoiders had a higher SBP and DBP throughout the experiment compared to high avoiders and a lower heart rate than high avoiders, apart from the steep increase in heart rate for low emotional avoiders at the debrief measurement point. Both groups indicated a slight decrease in SBP and DBP after viewing the conflict video clip.

7.6.3 Conflict Avoidance

Subsequent analysis of the differences between low and high avoiders indicated that high conflict avoiders said they didn't feel more stressed while watching the conflict video compared to the low conflict avoiders, but high conflict avoiders indicated that they would feel significantly more stressed than low conflict avoiders had they found themselves in such a situation. No further significant differences were reported for Conflict Avoidance. However, the SBP and DBP curves over time indicated a comparatively sharp drop in blood pressure for high conflict avoiders after watching the conflict video, but a less sharp drop in SBP and DBP after watching the neutral video clip, compared to the blood pressure curve for low conflict avoiders who showed a steady decline in blood pressure.

7.6.4 Conclusions

The results reported in this chapter were based on an analysis of cardiovascular activity within a reasonably diverse sample in terms of age and ethnicity, and consisting of an approximately equal number of males and females. However, when interpreting the results it is important to keep in mind that the sample sizes, although adequate for laboratory manipulations, were nonetheless relatively small. The differences in sample size between the sub-samples of high and low avoiders might also have an effect on the results obtained, although Levene's test for the equality of variances in samples indicated that the variances were comparable across samples for the majority of the comparisons. The overall sample obtained reported relatively low levels of avoidance coping, though that was perhaps not surprising in view of the non-clinical nature of the sample. Owing to constraints on the length of the experimental procedure, only one cardiovascular measurement was obtained per experimental condition. Obtaining more measurements and averaging the results over experimental conditions may have produced different findings, as would larger samples. Similarly the experiment included a low risk laboratory induced stressor and the effects of naturalistic or more significant stressors could provide different results.

The line graphs indicating the differences in mean cardiovascular activity between high and low avoiders followed a reasonably telling trend with low avoiders in this sample consistently having higher mean SBP and DBP than high avoiders, but lower HR. Despite the small sample and subsample sizes, the results do resonate with Fontana and McLaughlin (1998) in high avoiders generally exhibiting a relatively sharp drop in SBP and DBP after viewing the conflict video compared to low avoiders, despite indicating that they weren't statistically significantly more distressed while watching the conflict video than low avoiders.

There is a vast literature base reporting the links between stress and cardiovascular responses, however, the results have been equivocal and in some instances almost contradictory (see for example: Martin, *et al*., 2011; Schwerdtfeger, *et al*., 2005). A detailed review of all the equivocal findings is beyond the scope of this chapter and thesis; however, some of the results obtained in this chapter do resonate with previous research where the role of coping on cardiovascular activity was assessed.

The results noted in the paragraph above, as well as the cardiovascular results reported for high and low avoiders, as well as the seemingly more erratic cardiovascular reactivity of high avoiders, resonate with laboratory findings reported by Mendolia and Kleck (1993). In their experiment the effects of talking about emotions experienced (emotion condition) during a stressful event versus describing the sequence of events (fact condition) were assessed based on autonomic arousal. The authors concluded that expressing emotional reactions to a stressor could be more distressing soon after it occurred compared to purely describing the stressful event, but that individuals who expressed their emotional reactions would be less disturbed when facing the stressor at a later time or while talking about it.

Research participants in all groups indicated that they would feel more distressed should they find themselves in a conflict situation similar to the one they watched on video, rather than merely watching it on a screen. Compared to low avoiders, high avoiders indicated that they would be more distressed in an actual situation, which might indicate an anticipatory expectation of distress amongst the high

avoiders. The significant differences for how often general high avoiders found themselves in situations similar to the ones depicted in the videos compared to low general avoiders might be indicative of differences in the way people differing in avoidance coping interpret situations they find themselves in. This could also lead to high avoiders generally attempting to stay clear of any potential conflict situations which could lead to unresolved personal, work or other issues escalating, again leading to likely adverse outcomes.

Taken together, the results suggest that the effects of avoidance might be compounded by the so-called 'priming effect' (Wegner, Schneider, Carter and White, 1987): suppressing unwanted thoughts can lead to increased recurrence of the suppressed thoughts. High avoiders said they would feel more stressed in a conflict situation than low avoiders, despite the subjective stress ratings of watching the conflict video indicating that there was no difference between high and low avoiders' view of how stressful the conflict video was. In other words, high avoiders could be interpreting the situational conflict as be worse than it actually is. Thinking they may not be able to cope with a conflict situation could lead to increased avoidance of those situations, yet after being in the situation, it then didn't appear to be more stressful than it would for a low avoider.

Examining the line graphs showed that in both high and low avoider groups, SBP and DBP dropped after viewing the conflict video, although the blood pressure response pattern for high avoider groups appeared more erratic during the experiment. It could be that the experimental situation in itself is seen as a stressor. The results from the Emotional Avoidance analysis echo findings reported by Martin, *et al*. (2011), who showed that coping played a role in heart rate variability. This is apparent in the difference between high and low emotional avoiders approaching statistical significance ($p = 0.061$) from base heart rate to debrief heart rate, with low emotional avoiders indicating a steep increase in heart rate at the debrief condition.

This thesis offers a new scale for assessing multidimensional avoidance coping, and in view of the exploratory nature of the project, as well as the absence of

unequivocal theoretical models and experimental findings on which to build explicit expectations, the expected findings from each of the studies were not expressed as formal hypotheses. The general expectation indicated in this Chapter was that people who report high levels of avoidance coping would perceive the conflict as more stressful than those who report low levels of avoidance coping. It was also expected that the two groups would subsequently respond physiologically differently based on the cardiovascular measures obtained. Both of these expectations were supported to some extent by the findings reported in this Chapter.

Although the study described in this chapter was limited by a variety of constraints, the overall findings do offer a strong argument for extending the research, particularly in the context of clinical as opposed to non-clinical samples (settings). Longitudinal studies would provide a test of whether individuals who engage maladaptive coping strategies do exhibit greater psychophysiological discomfort, as well as psychological and physical problems. These kinds of studies present a number of challenges, particularly ethical ones, but although of a speculative nature the conclusions from the findings reported in this chapter indicate potentially rewarding avenues for future research using the GSAQ.

Chapter 8: Overall Conclusions

The introductory chapter to this thesis reviewed the current literature and thinking around stress, coping and specifically avoidance coping. The effects of stress and the moderating role of coping was explored from different perspectives, and the wider context of the endocrine response and the potential implications on the expression of genetic material and chromosomal stability were also very briefly reviewed (for example, Arnsten 2009 & 2011; Epel, *et al*., 2004; Foley & Kirschbaum, 2010; Kingsley, 1996; Lovejoy, 2006; Puterman, *et al*., 2010). Chapter 1: Introduction and Literature Review also included a short review of stress and coping within occupational contexts, where the significant economic cost associated with workplace-related stress alone provides a powerful motive for research on stress and coping, as well as exploring effective ways to deal with these problems (for example, Donaldson-Fielder, *et al*., 2001; Pienaar, *et al*., 2007).

Based on the evidence there is little doubt that psychological distress and maladaptive coping strategies could have potentially adverse effects on health status, while adaptive coping strategies could have beneficial or at least fewer deleterious effects on health. Researchers and clinicians continuously express concerns about the potentially adverse effects of avoidance on psychological and physical health, especially in the long-term. These views have been expressed based on both theoretical models such as the Experiential Avoidance Model (EAM – for e.g. Chapman, *et al*., 2006) and empirical evidence using various coping measurement tools (for example, Davies & Clark, 1998; van Minnen & Hagenaars, 2010; Rassin, *et al*., 2000; Kashdan, *et al*., 2006). However, the instruments for assessing coping have been beset by a range of psychometric shortcomings, and these have been highlighted with a particular focus on measures of avoidance coping. The aim of this thesis was to assess the role of avoidance coping in psychological and physical health, but in order to do so the psychometric shortcomings of existing coping scales had to be addressed, particularly those affecting recently developed multidimensional measures of avoidance coping.

The concerns raised about existing instruments include the construction of scale items based on theory, clinical experience and judgements of face validity by 'expert' panels. Various authors have also highlighted other issues including scales with too few items to reliably assess specific coping strategies, items with ambiguous meaning, extracting too many factors by relying on eigen-value 1 extraction criteria, failing to conduct or report confirmatory factor analysis (CFA) of obtained factor structures, and including items that are too situation-specific or are inappropriate for use in some population groups. The majority of coping scales have been developed and validated in university student samples rather than samples from the general population, and the emphasis has commonly been on clinical implications to the exclusion of non-clinical ones. Chapter 1: Introduction and Literature Review, provides a more detailed review of the various shortcomings.

The same issues have marred recent attempts to develop multidimensional avoidance measures, such as the Cognitive-Behavioural Avoidance Scale (CBAS - Ottenbreit & Dobson, 2004) which includes both cognitive and behavioural avoidance factors across social and non-social dimensions, as well as active versus passive dimensions. The CBAS items were derived from theory and existing coping measures, and the scale was developed mainly in student samples and lacked validation from confirmatory factor analysis (CFA). In addition, the small number of items in the various subscales raises the question of whether the CBAS adequately assesses the behavioural domain within each subscale, and whether appropriate factor selection methodology was used.

A number of other avoidance coping scales were critically reviewed in the introductory chapter, including the Cognitive Avoidance Questionnaire (CAQ - Sexton & Dugas, 2008) and the Multidimensional Experiential Avoidance Questionnaire (MEAQ - Gámez, *et al*., 2011), and the general conclusion was that, like the CBAS, the scales were all compromised in one way or another by psychometric shortcomings. The review provided a clear justification for revisiting the assessment of avoidance coping, but using appropriate psychometric methodology.

The development of the General and Specific Avoidance Questionnaire (GSAQ) addressed the psychometric development issues by firstly developing scale items derived from a scenario technique developed by Roger and colleagues (for example, Forbes & Roger, 1999; Roger & Najarian, 1989; Roger, *et al*., 1993). This technique is based on a set of potentially stressful scenarios and asking people to state, for each of the scenarios, how they would feel, what would be their likely thoughts, and what they would do if they found themselves in such a scenario. In this thesis, the scenarios were developed based on a review of clinical, non-clinical and organisational stress and coping related literature, and more importantly on interviews with members of the general public, asking them to describe situations during which they have felt pressured, challenged or under threat.

A large number of scenarios were developed in this way, and further review and refinement led to a questionnaire comprising a set of 35 scenarios encompassing social and non-social situations. The situations varied in the degree of relationship involved, such as immediate family, distant family, colleagues, friends, and strangers, and included scenarios ranging from personal to work-related situations. The scenario questionnaire was further developed by adding a life domains section, which enhanced the qualitative nature of the strategy. The life domains questionnaire allowed participants to describe any significant event they had to deal with within nine life domains (Work, Immediate Family, Extended Family, Friends, Financial, Community, Physical Health, Mental Health, and Spiritual Health) and to explain how they felt, what they thought and what they did during and after the event they had described.

Although this Scenario and Life Domain Questionnaire (SLDQ) was a lengthy document, it provided an invaluable set of potential coping responses (2630) to work from. These unbiased responses were expressed in the vernacular rather than academic and theoretical or clinical language, and an initial set of coping responses was extracted from them following established psychometric methodologies (for example, DeVellis, 2003; Hinkin, 1995; Rogelberg, 2004). The final set of 67 avoidance coping items was made available to 264 voluntary research participants from a broad range of backgrounds, including university students and mostly

working adults from the general population representing a range of nationalities. A scree plot and parallel analysis at the 95th and 99th percentiles indicated a clear three-factor extraction. A three-factor principal axis factoring (PAF) with a 0.35 extraction criterion and varimax rotation, rendered a final 43-item GSAQ.

The GSAQ included General Avoidance, Emotional Avoidance and Conflict Avoidance subscales, all with good internal consistency as well as temporal stability over 30-107 day test-retest periods. In Chapter 3: Confirmatory Factor Analysis, confirmatory factor analysis (CFA) results clearly supported the three-factor model for the GSAQ in two independent samples, one comprising university students from the United Kingdom and the other drawn from the working adult population in New Zealand. This provided strong support for the EFA results reported in Chapter 2: General and Specific Avoidance Questionnaire Development, and addressed the concerns raised over existing coping scales lacking evidence for CFA, which is regarded as a formal and robust hypothesis test for model fit (see Brace, *et al*., 2006; DeVellis, 2003). Having independent samples from initial EFA procedures is an essential component of CFA, and having two independent samples in the current project provided additional replication of the findings. Replication is one of the foundations of scientific method, but is an underutilised technique in social science research (Schmidt, 2009).

Concurrent validation indicated that the significant divergent and convergent correlations with validated criterion scales, including coping measures (adaptive proactive coping and detached coping), emotional responses (maladaptive rumination) and measures of psychological (depression, anxiety, stress) and physical health (somatic symptoms associated with psychological distress), were largely as anticipated. The findings were similar in two independent samples comprising a sample from the working adult population in New Zealand and a university student sample from the United Kingdom, although small differences in the magnitude of correlations were found between the two samples. The results showed that avoidance correlated positively with psychological and physical health (higher scores on these measures indicated a more compromised health status), negatively with adaptive criterion measures and positively with maladaptive

criterion measures, thus placing avoidance coping firmly in the category of a maladaptive response. Surprisingly, though, Emotional Avoidance tended to exhibit low to zero-order correlations across the samples and measures.

Both samples scored within the normal range on the depression, anxiety and stress scales, and the non-clinical nature of the samples probably mitigated the correlations with avoidance coping. Nevertheless, the results did show similar patterns across the two samples, and echoed findings reported by other researchers (for example, Friedman, *et al*., 1992; Ottenbreit & Dobson, 2004; Oxlad, *et al*., 2004). General Avoidance and Conflict Avoidance appeared to be the best predictors of health outcomes, with Emotional Avoidance less so. The low to zero order correlations between Emotional Avoidance and the psychological health measures (depression, anxiety and stress) could indicate that some individuals may have responded to the questionnaire (DASS21) in a way allowing them to emotionally avoid intrusive thoughts (about feeling depressed, anxious or stressed). This could give rise to low or zero-order correlations and would be in line with the Emotional Avoidance construct, for example, some people attempt to emotionally avoid feelings or thoughts about depression, anxiety and stress, while others don't, thereby rendering low and non-significant correlations. However, there was statistically significant correlation between Emotional Avoidance and physical symptoms associated with psychological distress ($r = 0.207$; $p < 0.05$), indicating that some emotional avoiders may attempt to refrain from reporting psychological symptoms likely to raise intrusive thoughts (about feeling depressed or stressed), but acknowledge physical symptoms.

The role of avoidance coping in depression, anxiety, and stress was also explored in Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms. In view of the relatively small numbers of high avoiders compared to low avoiders in the samples of university students and working adults in Chapter 4 the low avoider subsamples were randomly divided into groups of comparable size to the high avoiders, and in all contrasts the high avoiders scored statistically significantly ($p<0.001$) higher on the GSAQ scales compared to low avoiders. General

Avoidance and Conflict Avoidance appeared to play the biggest role in the differences between high and low avoiders on depression scores, physical symptoms associated with psychological distress and reported stress scores, with statistically significant differences in most cases. These results echo the findings reported in Chapter 7: Avoidance Coping and Cardiovascular Activity, where high avoiders showed stronger cardiovascular reactivity in response to the conflict manipulation. Although the scores on depression, anxiety, stress and physical symptoms associated with psychological distress were not always significantly different between samples, the overall trend suggested that high avoiders report higher depression, anxiety and stress as well as more physical symptoms associated with psychological distress, but at the same time tended to report fewer symptoms to a doctor.

A number of authors have argued that coping research has not sufficiently captured cultural differences, and that cultural and societal differences could significantly affect the nature and structure of the coping process (for example, Aguilar-Vafaie & Abiari, 2007; Dunahoo, *et al*., 1998; Kuo, *et al*., 2006; Monnier, *et al*., 1998). Indeed, some authors have reported differential factor structures for coping scales in various cultures (for example, CRI-A: Aguilar-Vafaie & Abiari, 2007; ECQ: Roger, *et al*., 2001; COPE: Sica, *et al*., 1997). The GSAQ was developed within English-speaking societies, and Chapter 5: Spanish Translation and Cross-Cultural Study of the GSAQ describes the development of a Spanish-translated version of the GSAQ using established back-translation methods which were followed by experienced bilingual researchers in Spain with extensive experience in this line of research and work. The translated Spanish version of the GSAQ was completed by two independent Spanish-speaking samples, one comprising university students from the Balearic Islands and the other from the working adult population in the Canary Islands.

These two samples provided the opportunity to replicate the study in the two Spanish samples, and the Spanish working adult sample could also be compared with the English-speaking working adult sample from New Zealand and the Spanish university students with the English-speaking university student sample

from the United Kingdom. Confirmatory factor analysis (CFA) indicated a best fit for the three-factor model of the GSAQ in both Spanish samples. Internal consistencies based on the original GSAQ factor structure in both Spanish samples were very good, but slightly lower for Conflict Avoidance in the university student sample from the Balearic Islands. The factor correlations based on the original GSAQ structure resembled the correlations obtained for the two English-speaking samples. The CFA results did suggest that the two-factor model might suit the Spanish samples and specifically the working adult sample from the Canary Islands (Sample 6) based on the fit indices cut-off criteria suggested in the literature (Brown, 2006; Rogelberg, 2004), however, the three-factor solution provided superior fit indices and the Chi-square difference test clearly supported the three-factor model.

There were, however, some significant differences in the items which loaded on the three factors, which will be discussed below, as well as differences in mean scores reflected in the results obtained by means of Analysis of Covariance (ANCOVA) and controlling for gender and age. The number of males in the two English-speaking samples was very small, and the male-female ratio substantially more biased compared to the ratio for the Spanish samples. However, females from the two Spanish samples generally reported lower levels of avoidance coping than females from the English speaking samples, indicating that there are cultural differences between the samples in terms of avoidance coping. In the light of criticisms highlighted earlier, these results need to be viewed with caution, based on differential factor structures within the different cultural groups, differences in sample sizes, male to female ratios and age-cohorts (working adults and university students).

A factorial validation was performed to assess and compare the factor structure within the four samples. It is generally expected that items will migrate across samples (for example Aguilar-Vafaie & Abiari, 2007; Roger, *et al*., 2001; Sica, *et al*., 1997), and this was indeed the case with these samples. Of the three GSAQ subscales the Emotional Avoidance factor was very relatively stable across all four samples, with minimal item migration. The Factor 1 (General Avoidance) and

Factor 3 (Conflict Avoidance) items did migrate to varying degrees across the four samples, and although the overall tenor of the new factors was maintained, these results would need to be validated in future studies using samples better matched on gender ratio, occupational status and other demographic variables. The differences in factor loadings reported in this thesis confirms previous studies, and reiterated that caution should be used when interpreting cultural differences based on analysing sample mean questionnaire and scale scores. For example, the original Conflict Avoidance factor was completely different in the Canary Islands working adult sample (Sample 6), but remained more stable in the other Spanish sample (Sample 5: Balearic Islands university students). The inverse occurred for General Avoidance, where the factor remained more stable in Sample 6 (Canary Islands) compared to Sample 5 (Balearic Islands).

In Sample 3 (New Zealand working adults) Factor 1 reflected engaging rather than avoiding a problem and Factor 3 related to pretending that problems don't exist. In the United Kingdom university sample (Sample 4) Factor 1 indicated a similar engagement versus taking no action interpretation, and Factor 3 relates to ignoring problems and wishing them away. The two Spanish samples also indicated different factors emerging from the original General and Conflict Avoidance factors. In the Balearic Islands university student sample (Sample 5) Factor 1 related to dealing with the problem at hand rather than ignoring it or wishing it away and Factor 3 related to not delaying dealing with a problem. In Sample 6 (Canary Islands working adults) Factor 1 related to engaging with a problem rather than avoiding it or ignoring it, and Factor 3 mirrors ignoring problems and pretending that they do not exist. Chapter 5: Spanish Translation and Cross-Cultural Study of the GSAQ provides some explanation and speculation about why these sample differences occurred.

As noted above, the CFA analysis suggested that a two-factor model (Emotional Avoidance and a combined factor comprising General Avoidance and Conflict Avoidance) also produced acceptable fit indices for Sample 6 (Canary Islands working adults) and some of the fit indices for Sample 5 (Balearic Islands university students) were also acceptable. Nevertheless the three-factor model

provided superior fit indices and the Chi-square difference test for nested models clearly supported the three-factor model. A subsidiary exploratory factor analysis (EFA) was run with the combined Spanish samples' data and indicated a robust Emotional Avoidance factor, with a general factor comprising items from the original General Avoidance and Conflict Avoidance factors.

Chapter 5: Spanish Translation and Cross-Cultural Study of the GSAQ suggested that the stable Emotional Avoidance factor and unstable (though similar) General and Conflict Avoidance factors puts a question mark over whether other more elaborate multidimensional avoidance scales (such as the CBAS, CAQ and MEAQ) will maintain their structures across different cultures. The results reported in this thesis indicated that Emotional Avoidance, like Rumination (Roger, *et al*., 2001), is a stable coping strategy within various cultures. While the findings in this thesis do not directly assess the following speculation, the concurrent correlations between Rumination and Emotional Avoidance were particularly low and non-significant. It is worth speculating that although people may have habitual ways of coping with situations, they will, for example, either choose to ruminate about intrusive thoughts or attempt to avoid them.

Deliberate self-harm (DSH) has been highlighted as a significant global concern, and a number of studies have explored the relationship between DSH and avoidance (for example, Borrill, *et al*., 2003; and Chapman, *et al*., 2005). Brown, *et al*. (2007) note that limited research has been done on the coping process in relation to non-suicidal self-harm in non-clinical samples, but a few studies have alluded to the potential role of avoidance coping in DSH. These have all used existing coping scales that were unidimentional, and Chapter 6: Avoidance Coping and Deliberate Self-Harm, describes the role of avoidance coping in DSH using for the first time a multidimentional avoidance coping scale in a non-clinical sample. For the self-harm study, a sample of university students in the United Kingdom completed a series of questionnaires including the GSAQ as well as other measures of coping (Proactive Coping from the PCI - Greenglass, *et al*., 1999 and Detached Coping from the CSQ3 - Roger, *et al*., 1993), an emotional response scale (Rumination from the I-RS - Roger, *et al*., 2011), and a measure of psychological

health (Depression, Anxiety and Stress from the DASS21 - Lovibond & Lovibond, 1995). The students also completed the Deliberate Self-Harm Inventory (DSHI – Gratz, 2001).

Almost 32% of the sample indicated that they had self-harmed in the past, and analyses of the differences between the self-harm and no self-harm groups indicated that there were differences between the groups in terms of depression ($p < 0.01$), anxiety ($p < 0.001$) and stress ($p < 0.001$), with the self-harm group obtaining higher scores on all three scales. Detached Coping ($p < 0.01$) and Rumination ($p < 0.001$) also discriminated significantly between the two groups, with the self-harm group obtaining lower scores for Detached Coping and higher scores for Rumination. The self-harm group did score higher on all three the GSAQ scales compared to the no self-harm group, but the differences between the two samples were non-significant for all the three scales and also for Proactive Coping.

Logistic regression analysis indicated that Detached Coping was the only significant predictor of self-harm status within the coping domains assessed, but overall Rumination remained the strongest predictor of self-harm status. None of the GSAQ scales predicted self-harm status and neither did Proactive Coping or the DASS21 scale for depression, anxiety and stress (although the DASS21 stress scale did approach significance, $p = 0.076$). Chapman, *et al*. (2005) also found no significant relationship between avoidance coping and deliberate self-harm, but using a general index of avoidance, Borrill, *et al*. (2011) found that avoidance coping was a significant predictor of repeated self-harm attempts, and the differences between self-harm and no self-harm groups on the same single-dimension avoidance coping scale were significant in a study by Borrill, *et al*. (2009).

The Borrill *et al.* (2009 and 2011) papers had also included the I-RS Rumination index, and the significant association between rumination and self-harming behaviour was replicated in the present study. This suggests that the differences in the findings for avoidance coping and self-harm noted could have been biased by the coping scales that were used – although the Borrill *et al*. studies included

comparable non-clinical samples, the avoidance assessment was different from the multidimensional index of avoidance provided by the GSAQ. In addition, there were substantial differences between the samples used in the different studies – for example, the subsample of repeated self-harmers was too small in the current study to make direct comparisons with the results from the Borrill *et al*. (2011) study. Overall, the findings indicate that further studies of the link between self-harm and avoidance coping using the GSAQ and larger samples would provide a fruitful avenue for future research, particularly if clinical samples could be included. The self-harm sample used in Chapter 6 of this thesis scored well within the normal range on the DASS21 (depression, anxiety and stress), and the majority indicated that their last self-harm attempt had been more than a year previously; the results might be different when clinical samples are assessed 'at the time of self-harm'.

A great deal of research has confirmed a relationship between stress and psychological as well as physical health outcomes, but few studies have explored the moderating role of coping strategies in physiological responses to stressors (for example, Martin, *et al*., 2011; Nyklíček & Vingerhoets, 2009). Sustained activation of the so-called physiological stress-response has been shown to have deleterious effects on health and even on gene expression and chromosome stability (see for example, Arnsten, 2009; Feder, *et al*., 2009). Links between GSAQ avoidance coping and both somatic health and symptoms associated with psychological distress were reported in Chapter 4: Concurrent validation of the GSAQ and further exploration of the relationship between avoidance, depression, anxiety, stress and physical symptoms, and to further explore the role of avoidance coping in the physiological response to stress, Chapter 7: Avoidance Coping and Cardiovascular Activity in Response to Laboratory-Manipulated Conflict Scenarios, incorporated an experimental laboratory study. Research participants were exposed in a counterbalanced design to a neutral stimulus and a mild stressor by viewing two short video clips, one depicting a friendly public conversation and the other a heated public argument. Measures of participants' systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) were taken at baseline, throughout the conditions, and during recovery. Participants were also asked to respond to a number of post-video questions.

A manipulation check indicated that research participants found the conflict video significantly more stressful than the neutral video clip, and participants also indicated that they would feel significantly more stressed if they were in the situation depicted in the conflict video compared to the neutral video. The results reported in Chapter 7: Avoidance Coping and Cardiovascular Activity in Response to Laboratory-Manipulated Conflict Scenarios largely supported the expectation that different coping responses affect physiological outcomes. High and low avoiders were compared on the percentage change in cardiovascular activity from the baseline measurement for SBP, DBP and HR across the three scales of the GSAQ, and although the sample was relatively small (N = 32), high avoiders tended to show a larger drop in SBP and DBP in response to the conflict video compared to low avoiders. This resonates with earlier studies (for example, Fontana and McLaughlin, 1998) in showing that high avoiders generally indicated a larger drop in SBP and DBP after viewing the conflict video despite indicating that they did not find it statistically significantly more stressful. Interestingly, high avoiders stated that they would be statistically significantly more stressed than low avoiders if they found themselves in a situation similar to the one in the conflict video. They also indicated that they had been in similar situations more often than low avoiders, but the high avoiders did not actually find the video statistically significantly more stressful compared to low avoiders.

Considering the different GSAQ dimensions separately, it was surprising that the effects were primarily for General Avoidance and Emotional Avoidance. The absence of effects for Conflict Avoidance was surprising, considering that the laboratory manipulation was specifically based on comparing conflict and non-conflict conditions that participants rated as being significantly different. The reasons for this are unclear, but on a more speculative note, the conflict avoiders might have faked their feelings about how stressed they found the video, an effect that might have been magnified by the relatively small sample. On the other hand, however, the cardiovascular measures also yielded no significant differences for conflict avoidance. The complexity of the cardiovascular response, variability in recovery periods, and the lack of more measures per conditions on more different

experimental conditions (only one type of conflict situation was tested) could all potentially have affected the results obtained in this study. It is equally possible that low conflict avoiders do respond similarly to high conflict avoiders during conflict situations, but that they do not feel as stressed about the possibility of being in a similar conflict situation compared to high conflict avoiders. This latter point may explain why that was indeed the only statistically significant difference between the high and low conflict avoiders.

In summary, this thesis describes the development and validation of a new index of avoidance coping by addressing the shortcomings noted for existing general and multidimensional avoidance coping scales. The results provide strong evidence for the three-factor structure of avoidance coping – General Avoidance, Emotional Avoidance and Conflict Avoidance – in both the working adult and university student samples. The structure was replicated in Spanish-speaking samples, although there were both similarities and differences in the 'flavour' of the factors across cultures. These cultural differences and similarities certainly warrant further research using the GSAQ in wider cultural comparisons.

There is no doubt that the research reported in this thesis was challenged by a number of constraints not uncommon to many Psychology research projects, and there are caveats to be cognisant of when interpreting the results. These have been listed in the different chapters, and include sample sizes that were relatively small in some cases or comprised too few participants to reliably perform gender-specific analyses. This was also true for comparisons between high and low avoider groups and groups from different cultures. The English-speaking samples in particular were strongly biased towards female participants, and while the student samples from the United Kingdom comprised exclusively psychology undergraduates, the Spanish-speaking student samples included students from a range of disciplines including biology, engineering, psychology, and education. The majority of the data were also based on self-reported assessments. The exception was the laboratory study reported in Chapter 7: Avoidance Coping and Cardiovascular Activity in Response to Laboratory-Manipulated Conflict Scenarios which used cardiovascular indices as the dependent variables, but only one cardiovascular

reading was taken per condition per person, and it is possible that the experimental setting itself may have been construed as a 'stressful' situation and not just the conflict manipulation that comprised the stressor in the study. Physiological indices can also be subject to other factors such as medication used, undisclosed existing medical or psychological conditions or personal circumstances.

However, despite these constraints the GSAQ offers a robust and reliable new development in coping research, and specifically in the domain of avoidance coping. It has been developed using a unique scenario and life-domains technique as well as appropriate psychometric methods. Considering the theoretical and clinical views about the importance of avoidance coping in psychological and physiological health outcomes, as well as the growing body of research supporting these concerns, the GSAQ provides a platform from which the role of multidimensional avoidance can be explored in a wide range of settings.

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APPENDICES

Appendix 1: University of Canterbury Human Ethics Committee Approval

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Ref: HEC 2010/26

9 April 2010

Leendert Stemmet
Department of Psychology
UNIVERSITY OF CANTERBURY

Dear Leendert

The Human Ethics Committee advises that your research proposal "Avoidance coping: scale construction and validation" has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 7 April 2010.

Best wishes for your project.

Yours sincerely

Dr Michael Grimshaw
Chair, Human Ethics Committee

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UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Thank you for taking the time to take part in this pilot study. The main aim of the study is to look at some forms of coping behaviour in order to develop a new reliable measurement instrument which will help researchers to define and address the issue of 'coping' more accurately. Your responses are completely voluntary and confidential - please do not disclose any personal identifying information. There are two parts. Please complete both parts as far as you can.

The project is being carried out as a requirement for the degree Doctor of Philosophy by Lehan Stemmet under the supervision of Dr Derek Roger, who can be contacted at telephone number +64 (0) x xxx xxxx or email Lxxxx@xxxx.co.nz or xxxx@xxxxxxxxxxxxxx.co.nz respectively. They will be pleased to discuss any concerns you may have about participation in the project.

The questionnaire is anonymous, and you will not be identified as a participant without your consent. You may withdraw your participation, including withdrawal of any information you have provided, until your questionnaire has been added to the others collected. Because it is anonymous, it cannot be retrieved after that. Withdrawal from the project will not affect any future interactions with the University of Canterbury. The anonymous raw data will be stored in a password-protected database for a maximum of two years post the completion of the doctoral research project.

This questionnaire may take between 30 to 45 minutes to complete, depending on the number of questions you answer and the detail you provide.

By completing the questionnaire it will be understood that you have consented to participate in the project, and that you consent to publication of the results of the project with the understanding that anonymity will be preserved.

The project has been reviewed and approved by the University of Canterbury Human Ethics Committee.

Your age: _____

Your gender: _____

Your nationality: _____

Your occupation sector: _____
(e.g.: administration, operations, manager, sales, etc)

PART 1: Scenarios

We are interested in what ***your*** likely response will be when faced with the scenarios listed below. There are no right or wrong answers. Please provide brief responses to as many of the scenarios listed below as you feel able to, in terms of how ***you*** would feel, what ***you*** would think and what ***you*** are likely to do when faced with the scenarios below.

---

1. You arrive home early from work one afternoon and find your brother, who is staying with you for a while, using something that looks like illegal drugs.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

2. A news report suggested that recent scientific research confirmed that one of your favourite snacks could possibly lead to serious health conditions, including heart problems. Recently you have been getting heart palpitations every now and again.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

3. As soon as you walked through the boardroom door, you realised that you arrived late for this important meeting. Everyone has been waiting for you.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

4. After moving to a new town, and trying to impress your new acquaintances, you have exaggerated a bit about how you happen to be an expert in a subject. A week later, one of these new acquaintances caught up with you at the supermarket and said he told members of his club what you had told them, and that the club requested that you present a talk about a related topic at their next annual general meeting in two weeks' time.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

5. You planned to spend your day relaxing by spending it by yourself. You have not had an opportunity like this for a very long time. While on the bus on the way to the mall to watch a movie, you were daydreaming and missed your drop-off point at the mall.

   a. How would you feel?
   b. Describe your likely thoughts?
   c. What would you do?

6. While waiting at the airport, a complete stranger sits next to you and asks you if you could help with a relationship dilemma. She is expecting her partner to arrive at the airport any moment and suspects he may be returning from a weekend away with another woman and not from a conference as he claimed. She wants to show you a photograph of her partner and wants you to help her spot him and 'the other woman'.

   a. How would you feel?
   b. Describe your likely thoughts?
   c. What would you do?

7. Your cousin phones you to ask if you could help her with a personal dilemma. You have not spoken to her for 2 years and only heard stories about her drug abuse from other family members. She asks if you will be willing to be her friend as the rehabilitation counsellor suggested that she spends more time with positive influences and people of her age, and she regards you as a positive role model of a similar age in her life.

   a. How would you feel?
   b. Describe your likely thoughts?
   c. What would you do?

8. About 2 months ago, you have agreed to house sit for a close friend while he went away on holiday. He said you could use his new car while he is away. After dropping him off at the airport, you went to the shopping mall in his car and when you returned to the car 1 hour later, you realised that you left the passenger window open and that someone had stolen the GPS navigational system. Since that day, you have been getting the impression that your friend does not trust you as much as he used to.

   a. How would you feel?
   b. Describe your likely thoughts?
   c. What would you do?

9. A friend returns home after a year overseas and leaves a message on your phone that she would like to catch up sometime. The two of you were close

friends, but you had a huge argument before she left and you have not been in touch at all while she was away.

a. How would you feel?
b. Describe your likely thoughts?
c. What would you do?

10. You know the company that you work for is going through some restructuring and as a result, some people were made redundant. You have received an email from your manager that he would like to see you as soon as you get a chance.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

11. A colleague you have been working with for the past 2 years asks if you could help him with a personal dilemma. He has a young son, but never married the mother, who is relocating to another country and she wants to take their son with her. Your colleague does not want to be so far away from his son.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

12. When you were much younger, you had very big ears and people used to tease you about it, and called you all sorts of names. An old school friend meets up with you unexpectedly at a national work conference, and although you do not have big ears any longer, he keeps calling you by one of these old school nicknames. You really do not like it and especially not in front of your colleagues.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

13. You are the leader of a team and some of your fellow team members tell you that they are tired of the bad relationship between two of your team members, and how it is affecting the rest of the team. Up until now you have not been aware of this issue and one of the people who came to complain about this issue points out that it may be because you are a bad team leader.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

14. You knew you had to deliver a presentation about your new project to your colleagues today, but on Thursday, before the long weekend started, you did not feel like doing any preparation. You told yourself that you'd prepare something over the weekend. When you wake up on Monday morning, it feels like the presentation-date arrived too soon and you realise that you feel unprepared.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

15. When you were younger, something traumatic happened to you. You have not thought about it for many years. One night while watching a movie by yourself something in the movie reminds you of your childhood experience.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

16. During a restructuring phase in the company that you work for, your boss explains his predicament to you. He would like to bounce some ideas off you about who should stay and who should be made redundant and that this conversation is confidential. You suspect he is going to make one of your colleagues redundant in order to keep one of his friends on the payroll, but he does not know that you are close friends with the colleague he wants to make redundant.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

17. During a phone call with your dad, he mentioned that he ran into one of your old school friend's dad. The friend's dad told your dad that your old friend has developed a severe illness and will be going to hospital soon. You have not been in touch with this old school friend for a decade, but his dad said to your dad that it might be good for him if you can visit.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

18. You have been getting dizzy spells lately and the doctor calls you while you are at work to give you the results of your blood tests. The doctor says that it does not look too good and he would like some more tests conducted.

a. How would you feel?
b. Describe your likely thoughts?
c. What would you do?

19. You have to prepare and present a presentation to your colleagues in 2-days' time about the project you have been working on for the last two months. You know there are parts of the project that you should have paid closer attention to, but the time pressure got the better of you.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

20. While at the movies with one of your friends, another good friend phoned and left a message on your phone to say that he was arrested and that he is definitely not guilty. This is not the first time he has been arrested, nor the first time he called on your help. He said in the message that he does not want his family or anyone else to know that he has been arrested, and asked if you could come and pick him up from the police station as soon as you get the message.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

21. You and a friend went to watch a stage play at the theatre. A scene from the play reminds you of a traumatic childhood experience. After the show, you went for coffee, and your friend asks you why you are so quiet.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

22. You have an important company meeting to attend and you are running a bit late – and to top it all, you spill some coffee on your shirt while driving to the office. Upon your arrival, a colleague you do not get along with sarcastically points out that you are late for the meeting and you catch his eyes glancing at the coffee stain.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

23. You have four messages on your phone from someone you had an argument with earlier in the day.

a. How would you feel?
b. Describe your likely thoughts?
c. What would you do?

24. You have been feeling very run-down physically for quite some time. The doctor sent blood samples for testing and after a week, while visiting one of your friends, you receive a call from the doctor that he would like to conduct some more tests. Your friend wants to know who called and what it was about.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

25. You are in a meeting with five other people when suddenly one of them points out that you don't know what you're talking about.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

26. Your brother tells you that he suspects his partner is having an affair with someone else.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

27. A close friend who moved to another town about 2 years ago tells you that she has been feeling very depressed and even suicidal at times. She wants to come and visit you for a week.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

28. While you were on a weekend away trip 6 months ago in a town near you, you were mugged at knifepoint. A colleague offered his holiday house in the same town to you and your family for a week during the December holiday.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

29. You have not flown anywhere in the past year, but during your last flight, there was a problem with the landing gear and the pilot performed an emergency landing. Your manager needs you to go overseas to help with some new initiatives at another branch office and says you are the best person for the job.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

30. You arrive back home after a long flight. While busy unpacking your suitcases you suspect the friend you went on holiday with forgot to pack up your laptop computer and to put it in your backpack like he said he would, while you went downstairs to pay for the room at the hotel. He insists that you never asked him to pack away your laptop.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

31. You hear your married neighbours across the street having a huge couple's argument. The next morning you notice the wife in the garden and it seems she has tried to cover up some physical marks on her face.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

32. Your sister has a physical abnormality and while the two of you are out in the park one day, a couple of people stare and point at her. You notice your sister subtly glancing over at the other people every now and again.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

33. You hear about a possible new flu pandemic on the news. The report indicates that some people had to be hospitalised in the area where you live. The next morning your throat feels a bit scratchy and you have a slight headache.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

34. The new neighbours who moved in a month ago have been playing loud music every weekend. You have not met them yet and you were looking forward to a relaxing weekend at home.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

35. Your boss asked you if you would mind going on a workplace first aid training course to help out during workplace emergencies. You and three others from your company agreed to go on the course. While on the course, Joe, one of your colleagues who also attended the training course, is clearly goofing around. A couple of weeks after the training, Joe asks you if you think the training was worthwhile and whether you would mind helping him to set up the health and safety committee your boss asked him to implement, and that this will really benefit the company and all the other employees.

    a. How would you feel?
    b. Describe your likely thoughts?
    c. What would you do?

PART 2: Life Domains

Please have a look at the life domains listed below and briefly describe a significant event that occurred for you within any of them that ***you*** can recall, and tell us how ***you*** felt, what ***you*** thought and what ***you*** did during and after the event you described.

---

1. Work

a. Briefly describe the event?
b. How did you feel?
c. Describe your thoughts?
d. What did you do to deal with it?

2. Immediate Family

a. Briefly describe the event?
b. How did you feel?
c. Describe your thoughts?
d. What did you do to deal with it?

3. Extended Family

a. Briefly describe the event?
b. How did you feel?
c. Describe your thoughts?
d. What did you do to deal with it?

4. Friends

a. Briefly describe the event?
b. How did you feel?
c. Describe your thoughts?
d. What did you do to deal with it?

5. Financial

a. Briefly describe the event?
b. How did you feel?
c. Describe your thoughts?
d. What did you do to deal with it?

6. Community

a. Briefly describe the event?
b. How did you feel?
c. Describe your thoughts?
d. What did you do to deal with it?

7. Physical Health

a. Briefly describe the event?
b. How did you feel?
c. Describe your thoughts?
d. What did you do to deal with it?

8. Mental Health

a. Briefly describe the event?
b. How did you feel?
c. Describe your thoughts?
d. What did you do to deal with it?

9. Spiritual Health

a. Briefly describe the event?
b. How did you feel?
c. Describe your thoughts?
d. What did you do to deal with it?

Thank you

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UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Debriefing Sheet

Thank you for taking the time to help me with this research project.

The main purpose of this experiment is to develop a new coping scale, and more specifically a scale measuring avoidance coping. Reliable measurement instruments are extremely important for psychological research. We have made use of a scenario and life domains technique specifically designed for this experiment in order to find out how people respond to potential challenges and stressors in general.

It is believed that avoidance coping is an important indicator for various physical and psychological health outcomes, however, there are few reliable measures of avoidance coping to test the relationship between physical and psychological health accurately. Future parts of this research project will also include various other physiological and psychological measurements in order to test the relationship between avoidance coping and health more accurately. The findings from this research project will aim to guide future research and clinical practice in the fields of coping, stress and health.

You are welcome to ask the researcher questions about the experiment by contacting the researcher or research supervisor on the contact details below or via the Department of Psychology at the University of Canterbury, New Zealand.

You may withdraw your participation, including withdrawal of any information you have provided at this point if you choose to do so. Hereafter the data you have provided will be stored anonymously for a maximum of two years after the completion of the doctoral research project. Because it is anonymous, it cannot be retrieved after it has been added to the data collected from other participants.

If you are experiencing any symptoms of stress, or any other health-related symptoms, please do not hesitate to contact your local doctor or your local qualified and accredited mental health practitioner. There are various counselling and psychological services listed in your local yellow pages usually under the headings "Counselling", "Psychologists", "Psychotherapists", "Doctor", "Emergency Services". Alternatively, you may also search for local health professionals on the internet using for example Google.com and search for, for example: "Doctor, Christchurch". If you are working for a company with an EAP service, please contact your EAP representative and if you are a student, you could contact the student support services.

If you are interested to receive a summary of the complete research report at the end of the completed project, please also leave your contact email address for us to forward you a copy and indicate that you would like to receive a copy of the research summary. Alternatively, the complete doctoral thesis will be available from the University of Canterbury Library if you wish to read more detail.

Many thanks for your participation.

Lehan Stemmet

Tel: +64 (0) x xxx xxxx
Lxxxx@xxxx.co.nz or xxxx@xxxxxxxxxxxxxxxxx.co.nz

Appendix 3: Memorandum of Understanding, Confidentiality and Nondisclosure Agreement

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UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

MEMORANDUM OF UNDERSTANDING, CONFIDENTIALITY AND NONDISCLOSURE AGREEMENT

L.J. Stemmet PhD Research Project at the University of Canterbury, New Zealand. (Hereinafter referred to as "The Research Project".)

Please read and complete this document with care, and return the completed document to L.J. Stemmet.

1. L.J. Stemmet agrees to treat the name of Name of Organisation/Person in any research report during The Research Project as confidential.
2. L.J. Stemmet agrees to keep participant identifying information confidential.
3. L.J. Stemmet agrees that The Research Project has been reviewed and approved by the Human Ethics Committee at the University of Canterbury (New Zealand).
4. L.J. Stemmet confirms that The Research Project is supervised by experienced practitioners, researchers and lecturers.
5. The following individuals have agreed to distribute research instruments, surveys and questionnaires to participants:

    5.1. _____

    5.2. _____

    5.3. _____

    5.4. _____

6. The individuals named in 5.1., 5.2., 5.3., and 5.4. agree to the following in order to protect any research participants in The Research Project:

    6.1. All participants shall be made aware that participation in The Research Project is voluntary and confidential; and that anyone may decline

participation or withdraw from any part of The Research Project whenever it suits him or her.

6.2. No information, samples, results, or any other related information about any participant in The Research Project shall be made available to any other party besides the signees on this agreement.

6.3. All participants in The Research Project shall be treated with respect and humanity, and shall not be mislead in any way with regards to The Research Project.

6.4. The main purpose of The Research Project shall be explained to participants.

6.5. Participants will receive a short explanation on how to complete the requirements of the project.

6.6. All materials collected for The Research Project will be handed to L.J. Stemmet or a person nominated by L.J. Stemmet.

6.7. No questionnaire, survey, scale, samples, measurement instrument or any other information made available during The Research Project shall be copied, duplicated or stored in any retrieval system whatsoever, unless written confirmation has been received from L.J. Stemmet.

6.8. Where questionnaires, surveys, scales or other measurement instruments have been included in The Research Project all parties should note that these may be copyrighted material and should be treated as such. Special permission would have been given to L.J. Stemmet to amend, copy and use this scale for The Research Project.

6.9. The individuals who signed agree to perform the following duties as part of The Research Project:

6.9.1 _____

6.9.2 _____

6.9.3 _____

6.9.4 _____

6.9.5 _____

7. All parties agree to the following outcomes as it relates to The Research Project:

7.1. _____

7.2. _____

7.3. _____

7.4. _____

8. If any of these points or parts of The Research Project seems unclear, please consult the Human Ethics Committee Guidelines at http://www.canterbury.ac.nz/humanethics

AGREED AND ACCEPTED BY: (please initial every page of this document to indicate that you have read, understood and agreed with the contents of it)

5.1.			
	Initials and Surname	Signature	Date
5.2.			
	Initials and Surname	Signature	Date
5.3.			
	Initials and Surname	Signature	Date
5.4.			
	Initials and Surname	Signature	Date
	Researcher	Signature	Date

Appendix 4: Original 67-item Avoidance Scale (CA4) made available to participants

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The column headings 'Derived' and 'Score' indicate the source of the item and scoring key respectively. In the 'Derived' column, 'Sce' indicates items from the Scenario Study, 'Dom' indicates items from the Life Domains study and 'DR' indicates items obtained from the Coping Responses Questionnaire (CSQ) developed by Roger, Jarvis and Najarian (1993).

Avoidance Scale CA4

There are instances when people are faced with events or situations in various parts of their lives when they feel stressed, pressured or challenged. People think, feel and act differently when faced with situations in which they feel stressed, pressured or challenged. How are you most likely to respond to situations during which you feel stressed, pressured or challenged? Please mark "TRUE" or "FALSE" for each of the statements below as it applies to you. There are no right or wrong answers. We are interested in how *you* are most likely to respond.

No.	Statement	Response		Derived	Score
1	I try to ignore thinking about the situation	TRUE	FALSE	Sce	TRUE+1
2	I try to think of other things to distract me from thinking about the situation	TRUE	FALSE	Sce	TRUE+1
3	I try not to think about things bothering me	TRUE	FALSE	Sce	TRUE+1
4	Problems don't just go away by themselves, therefore I deal with problems	TRUE	FALSE	Sce	FALSE+1
5	I try to avoid having to deal with the situation	TRUE	FALSE	Sce	TRUE+1
6	I don't walk away from difficult situations I should be dealing with	TRUE	FALSE	Sce	FALSE+1
7	I make up excuses to myself why I should not have to deal with the situation	TRUE	FALSE	Sce	TRUE+1
8	I pretend bad things never happened	TRUE	FALSE	Sce	TRUE+1
9	I can't just avoid situations in case they turn out to be similar to previous bad experiences	TRUE	FALSE	Sce	FALSE+1
10	I try to ignore tense situations between me and other people	TRUE	FALSE	Sce	TRUE+1
11	I find out as much as I can about the situation in order to deal with it	TRUE	FALSE	Sce	FALSE+1
12	I wait and see what happens	TRUE	FALSE	Sce	TRUE+1
13	I try thinking about the situation and how to solve it	TRUE	FALSE	Sce	FALSE+1

14	I deal with tension between me and other people because it won't go away by itself	TRUE	FALSE	Sce	FALSE+1
15	I downplay the importance of the situation to myself	TRUE	FALSE	Sce	TRUE+1
16	I change the subject when faced with a stressful situation with other people	TRUE	FALSE	Sce	TRUE+1
17	I deny the existence of concerns I have about a situation	TRUE	FALSE	Dom	TRUE+1
18	I don't shrug off the responsibility to deal with problems in my life	TRUE	FALSE	Sce	FALSE+1
19	I focus only on the positives of the situation and ignore the negatives	TRUE	FALSE	Sce	TRUE+1
20	I try to find a way out of having to deal with it	TRUE	FALSE	Sce	TRUE+1
21	I tell myself that this is just my fate, I can't do anything about it	TRUE	FALSE	Sce	TRUE+1
22	I deal with unpleasant circumstances by wishing they will just go away	TRUE	FALSE	Dom	TRUE+1
23	I try not to think about how bad it makes me feel	TRUE	FALSE	Sce	TRUE+1
24	I don't delay dealing with a situation	TRUE	FALSE	Sce	FALSE+1
25	I try not to think of the negative aspects of the situation	TRUE	FALSE	Sce	TRUE+1
26	When things bother me, I don't deny it to myself	TRUE	FALSE	Sce	FALSE+1
27	I try to ignore memories of difficult situations	TRUE	FALSE	Sce	TRUE+1
28	I think of ways to resolve difficult situations	TRUE	FALSE	Sce	FALSE+1
29	I don't deny it when there is tension between me and other people	TRUE	FALSE	Sce	FALSE+1
30	I try not to think about previous bad experiences	TRUE	FALSE	Sce	TRUE+1
31	I deal with conflict between me and other people rather than ignoring it	TRUE	FALSE	Dom	FALSE+1
32	I try doing things to distract me from thinking about the situation	TRUE	FALSE	Sce	TRUE+1
33	If I pretend that the problem doesn't exist it will go away by itself	TRUE	FALSE	Sce	TRUE+1
34	I think: that's life, and there's nothing I can do about it	TRUE	FALSE	Sce	TRUE+1
35	I try to forget that it ever happened	TRUE	FALSE	Sce	TRUE+1
36	In difficult situations, I pretend it didn't happen	TRUE	FALSE	Sce	TRUE+1
37	I think of excuses why I shouldn't deal with the situation	TRUE	FALSE	Sce	TRUE+1
38	In difficult situations with others, I tend to just leave it and walk away	TRUE	FALSE	Sce	TRUE+1
39	I try not to think of bad past experiences	TRUE	FALSE	Sce	TRUE+1
40	Ignoring my feelings about the situation won't make it go away	TRUE	FALSE	Sce	FALSE+1
41	I pretend that there is no tension between me and others even when there is tension	TRUE	FALSE	Sce	TRUE+1

42	I deal with my thoughts about bad past experiences to resolve any issues I have with it	TRUE	FALSE	Sce	FALSE+1
43	I deal with the situation immediately	TRUE	FALSE	Sce	FALSE+1
44	I downplay the importance of the situation to other people	TRUE	FALSE	Sce	TRUE+1
45	I prefer dealing with a problem rather than making up excuses why I shouldn't have to deal with it	TRUE	FALSE	Sce	FALSE+1
46	I consciously overlook things which are difficult to deal with	TRUE	FALSE	Sce	TRUE+1
47	I try to distract myself by thinking about other things	TRUE	FALSE	Sce	TRUE+1
48	I discuss difficult situations with the people involved	TRUE	FALSE	Sce	FALSE+1
49	I complain about the situation but don't actually do anything about it	TRUE	FALSE	Dom	TRUE+1
50	Rather than dealing with conflict, I hope it will go away	TRUE	FALSE	Dom	TRUE+1
51	I try to forget about unpleasant things I have experienced	TRUE	FALSE	Dom	TRUE+1
52	When experiencing an unpleasant situation, I tend to focus on fond memories only and disregard negative feelings	TRUE	FALSE	Dom	TRUE+1
53	Unpleasant circumstances have to be dealt with; they don't just go away	TRUE	FALSE	Dom	FALSE+1
54	I just hope the existence of concerns I have about a situation will go away	TRUE	FALSE	Dom	TRUE+1
55	I pretend something else is wrong, instead of focussing on the actual problem	TRUE	FALSE	Dom	TRUE+1
56	I pretend nothing is wrong when people ask me whether I am all right	TRUE	FALSE	Dom	TRUE+1
57	I think to myself that I have to deal with the situation, but don't do anything about it	TRUE	FALSE	Dom	TRUE+1
58	Under pressure, I prefer to sit tight and hope it all goes away	TRUE	FALSE	DR	TRUE+1
59	It's best just to get on with it rather than trying to avoid things	TRUE	FALSE	DR	FALSE+1
60	I tend to keep putting jobs I don't want to do to the bottom of the pile	TRUE	FALSE	DR	TRUE+1
61	I usually just ignore things and hope that time will somehow sort them out	TRUE	FALSE	DR	TRUE+1
62	I don't try to deny it if something has upset me	TRUE	FALSE	DR	FALSE+1
63	I often find myself daydreaming about something I would prefer to be doing	TRUE	FALSE	DR	TRUE+1
64	Rather than dealing with unpleasant things, I tend to look for something to distract me	TRUE	FALSE	DR	TRUE+1
65	Things don't just go away – it's best to deal with them immediately if you can	TRUE	FALSE	DR	FALSE+1
66	I can't just trust in fate and hope that things will work out for the best	TRUE	FALSE	DR	FALSE+1
67	If something upsets me, I try to just blot the whole thing out of my mind	TRUE	FALSE	DR	TRUE+1

Appendix 5: Principal Axis Factoring solution for three factors (Subsamples 1 & 2)

No.	Item Content	Factor 1	2	3
57	I think to myself that I have to deal with the situation, but don't do anything about it	.685		
5	I try to avoid having to deal with the situation	.667		
61	I usually just ignore things and hope that time will somehow sort them out	.627		
37	I think of excuses why I shouldn't deal with the situation	.611		
58	Under pressure, I prefer to sit tight and hope it all goes away	.609		
49	I complain about the situation but don't actually do anything about it	.597		
64	Rather than dealing with unpleasant things, I tend to look for something to distract me	.582		
1	I try to ignore thinking about the situation	.527	.350	
46	I consciously overlook things which are difficult to deal with	.516		
22	I deal with unpleasant circumstances by wishing they will just go away	.514		
2	I try to think of other things to distract me from thinking about the situation	.490	.369	
33	If I pretend that the problem doesn't exist it will go away by itself	.471		
54	I just hope the existence of concerns I have about a situation will go away	.445		
20	I try to find a way out of having to deal with it	.396		
21	I tell myself that this is just my fate, I can't do anything about it	.388		
55	I pretend something else is wrong, instead of focussing on the actual problem	.375		
17	I deny the existence of concerns I have about a situation	.374		
63	I often find myself daydreaming about something I would prefer to be doing	.360		
13	I try thinking about the situation and how to solve it	-.356		
26	When things bother me, I don't deny it to myself	-.370		
43	I deal with the situation immediately	-.389		
11	I find out as much as I can about the situation in order to deal with it	-.390		
18	I don't shrug off the responsibility to deal with problems in my life	-.404		
6	I don't walk away from difficult situations I should be dealing with	-.441		
24	I don't delay dealing with a situation	-.499		
4	Problems don't just go away by themselves, therefore I deal with problems	-.513		

45	I prefer dealing with a problem rather than making up excuses why I shouldn't have to deal with it	-.536		
30	I try not to think about previous bad experiences		.714	
51	I try to forget about unpleasant things I have experienced		.696	
27	I try to ignore memories of difficult situations		.663	
67	If something upsets me, I try to just blot the whole thing out of my mind		.474	
23	I try not to think about how bad it makes me feel		.458	
52	When experiencing an unpleasant situation, I tend to focus on fond memories only and disregard negative feelings		.418	
35	I try to forget that it ever happened		.410	
25	I try not to think of the negative aspects of the situation		.377	
47	I try to distract myself by thinking about other things	.516	.432	
36	In difficult situations, I pretend it didn't happen	.436	.357	
3	I try not to think about things bothering me	.361	.458	
14	I deal with tension between me and other people because it won't go away by itself			.512
31	I deal with conflict between me and other people rather than ignoring it			.501
53	Unpleasant circumstances have to be dealt with; they don't just go away			.482
48	I discuss difficult situations with the people involved			.478
29	I don't deny it when there is tension between me and other people			.414
65	Things don't just go away – it's best to deal with them immediately if you can			.391
59	It's best just to get on with it rather than trying to avoid things			.372
41	I pretend that there is no tension between me and others even when there is tension			-.363
38	In difficult situations with others, I tend to just leave it and walk away			-.424
50	Rather than dealing with conflict, I hope it will go away	.520		-.464

Appendix 6: Principal Axis Factoring solution for three factors on the 48-item (Combined and Separate Subsample 1 and 2)

Subsample 1 & 2			
N = 264			
KMO = 0.896			
Item	**1**	**2**	**3**
GSAQ5_F1	.675		
GSAQ41_F1	.663		
GSAQ26_F1	.614		
GSAQ42_F1	.608		.318
GSAQ44_F1	.597		.340
GSAQ34_F1	.577		
GSAQ30_F1	.552		.317
GSAQ4_F1	.543		
GSAQ46_F1	.530	.333	
GSAQ14_F1	.523		
GSAQ31_F1	.514		
GSAQ1_F1	.506	.362	
GSAQ35_F3	.506		.476
GSAQ23_F1	.503		
GSAQ6_F1	.471		
GSAQ32_F2	.467	.410	
GSAQ25_F2	.463	.348	
GSAQ2_F1	.452	.361	
GSAQ39_F1	.441		
GSAQ12_F1	.430		
GSAQ11_F1	.427		
GSAQ16_F1	.410		
GSAQ18_F1	.406		
GSAQ40_F1	.390		
GSAQ10_F1	.385		
GSAQ7_F1	.385		
GSAQ13_F1	.377		
GSAQ8_F1	.345		
GSAQ45_F1	.335		
GSAQ29_F1	.303		
GSAQ21_F2		.755	
GSAQ36_F2		.727	
GSAQ19_F2		.712	
GSAQ3_F2	.363	.460	
GSAQ48_F2	.338	.459	
GSAQ15_F2		.402	
GSAQ24_F2		.397	

Subsample 1			
N = 151			
KMO = 0.838			
Item	**1**	**2**	**3**
GSAQ41_F1	.740		
GSAQ26_F1	.714	.301	
GSAQ34_F1	.684		
GSAQ42_F1	.649		
GSAQ25_F2	.636		
GSAQ5_F1	.628		
GSAQ14_F1	.622		
GSAQ44_F1	.620		
GSAQ31_F1	.536		
GSAQ23_F1	.527		
GSAQ46_F1	.510	.364	
GSAQ40_F1	.510		
GSAQ35_F3	.507		.425
GSAQ1_F1	.488	.401	
GSAQ10_F1	.467		
GSAQ6_F1	.465		
GSAQ30_F1	.459		.453
GSAQ7_F1	.438		
GSAQ12_F1	.431		
GSAQ28_F3	.426		.308
GSAQ4_F1	.420		
GSAQ11_F1	.409		
GSAQ45_F1	.392		
GSAQ13_F1	.384		
GSAQ18_F1	.382		
GSAQ8_F1			
GSAQ36_F2		.737	
GSAQ21_F2		.724	
GSAQ19_F2		.712	
GSAQ24_F2	.317	.547	
GSAQ3_F2		.527	
GSAQ37_F2		.516	
GSAQ32_F2		.508	
GSAQ48_F2	.336	.507	
GSAQ2_F1		.419	
GSAQ15_F2		.417	
GSAQ39_F1	.414	.415	

Subsample 2			
N = 113			
KMO = 0.777			
Item	**1**	**2**	**3**
GSAQ35_F3	.612	.403	
GSAQ23_F1	.583		
GSAQ22_F3	.575		
GSAQ28_F3	.571		
GSAQ42_F1	.565	.412	
GSAQ43_F3	.557		
GSAQ14_F1	.539		
GSAQ20_F3	.530		
GSAQ9_F3	.526		
GSAQ33_F3	.523		
GSAQ38_F3	.487		
GSAQ4_F1	.470	.425	
GSAQ8_F1	.467		
GSAQ27_F3	.466		
GSAQ25_F2	.459		.346
GSAQ7_F1	.396	.301	
GSAQ24_F2	.348		
GSAQ13_F1	.337	.309	
GSAQ39_F1	.336	.329	
GSAQ31_F1	.318		
GSAQ47_F3			
GSAQ16_F1		.651	
GSAQ2_F1		.609	
GSAQ41_F1	.390	.594	
GSAQ32_F2		.591	
GSAQ46_F1		.575	
GSAQ5_F1	.457	.531	
GSAQ1_F1		.523	.331
GSAQ44_F1	.512	.520	
GSAQ29_F1		.507	
GSAQ34_F1	.366	.463	
GSAQ30_F1	.445	.457	
GSAQ45_F1		.422	
GSAQ3_F2		.420	.373
GSAQ26_F1	.368	.376	
GSAQ12_F1		.315	
GSAQ11_F1		.314	

GSAQ37_F2	.394		GSAQ17_F2		.374		GSAQ10_F1		.302	
GSAQ17_F2	.336		GSAQ9_F3			.689	GSAQ6_F1			
GSAQ9_F3		.671	GSAQ22_F3			.624	GSAQ40_F1			
GSAQ22_F3		.618	GSAQ33_F3			.582	GSAQ18_F1			
GSAQ33_F3		.505	GSAQ16_F1			.463	GSAQ21_F2			.739
GSAQ27_F3		.488	GSAQ27_F3	.349		.461	GSAQ19_F2			.675
GSAQ38_F3		.442	GSAQ47_F3			.449	GSAQ36_F2			.596
GSAQ47_F3		.440	GSAQ29_F1			.427	GSAQ15_F2			.449
GSAQ20_F3		.408	GSAQ20_F3			.414	GSAQ48_F2	.329	.328	.367
GSAQ28_F3		.391	GSAQ38_F3			.389	GSAQ17_F2			
GSAQ43_F3			GSAQ43_F3				GSAQ37_F2			

Appendix 7: Exploratory factor analysis of 43-item GSAQ using only Subsample 1 (as example of the structure)

Subsample 1 (New Zealand)				
N = 151				
KMO = 0.838				
Item	**Content**	**1**	**2**	**3**
GSAQ39_F1	I think to myself that I have to deal with the situation, but don't do anything about it	.709		
GSAQ25_F1	I think of excuses why I shouldn't deal with the situation	.687		
GSAQ33_F1	I complain about the situation but don't actually do anything about it	.684		
GSAQ13_F1	I deal with unpleasant circumstances by wishing they will just go away	.657		
GSAQ24_F1	In difficult situations, I pretend it didn't happen	.616		
GSAQ41_F1	I usually just ignore things and hope that time will somehow sort them out	.613		
GSAQ40_F1	Under pressure, I prefer to sit tight and hope it all goes away	.610		
GSAQ5_F1	I try to avoid having to deal with the situation	.580		
GSAQ38_F1	I pretend something else is wrong, instead of focussing on the actual problem	.536		
GSAQ30_F1	I consciously overlook things which are difficult to deal with	.520		
GSAQ22_F1	If I pretend that the problem doesn't exist it will go away by itself	.496		
GSAQ1_F1	I try to ignore thinking about the situation	.479	.396	
GSAQ29_F1	I prefer dealing with a problem rather than making up excuses why I shouldn't have to deal with it	.471		.393
GSAQ42_F1	Rather than dealing with unpleasant things, I tend to look for something to distract me	.465	.353	.369
GSAQ9_F1	I deny the existence of concerns I have about a situation	.462		
GSAQ6_F1	I don't walk away from difficult situations I should be dealing with	.441		
GSAQ11_F1	I try to find a way out of having to deal with it	.435		
GSAQ37_F1	I just hope the existence of concerns I have about a situation will go away	.428	.419	
GSAQ4_F1	Problems don't just go away by themselves, therefore I deal with problems	.409		
GSAQ7_F1	I find out as much as I can about the situation in order to deal with it	.407		

GSAQ12_F1	I tell myself that this is just my fate, I can't do anything about it	.405		
GSAQ10_F1	I don't shrug off the responsibility to deal with problems in my life	.367		
GSAQ17_F1	When things bother me, I don't deny it to myself	.346		
GSAQ35_F2	I try to forget about unpleasant things I have experienced		.737	
GSAQ20_F2	I try not to think about previous bad experiences		.721	
GSAQ18_F2	I try to ignore memories of difficult situations		.718	
GSAQ23_F2	I try to forget that it ever happened		.550	
GSAQ3_F2	I try not to think about things bothering me		.526	
GSAQ36_F2	When experiencing an unpleasant situation, I tend to focus on fond memories only and disregard negative feelings		.521	
GSAQ31_F2	I try to distract myself by thinking about other things		.503	
GSAQ43_F2	If something upsets me, I try to just blot the whole thing out of my mind		.503	
GSAQ2_F2	I try to think of other things to distract me from thinking about the situation		.419	
GSAQ14_F2	I try not to think about how bad it makes me feel		.415	
GSAQ16_F2	I try not to think of the negative aspects of the situation		.382	
GSAQ8_F3	I deal with tension between me and other people because it won't go away by itself			.737
GSAQ21_F3	I deal with conflict between me and other people rather than ignoring it			.603
GSAQ32_F3	I discuss difficult situations with the people involved			.590
GSAQ15_F3	I don't delay dealing with a situation			.551
GSAQ26_F3	In difficult situations with others, I tend to just leave it and walk away			.525
GSAQ28_F3	I deal with the situation immediately			.478
GSAQ34_F3	Rather than dealing with conflict, I hope it will go away	.472		.477
GSAQ19_F3	I don't deny it when there is tension between me and other people			.454
GSAQ27_F3	I pretend that there is no tension between me and others even when there is tension	.342		.452

Appendix 8: The 43-item General and Specific Avoidance Questionnaire (GSAQ) and Scoring Key

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There are instances when people are faced with events or situations in various parts of their lives when they feel stressed, pressured or challenged. People think, feel and act differently when faced with situations in which they feel stressed, pressured or challenged. How are you most likely to respond to situations during which you feel stressed, pressured or challenged? Please mark "TRUE" or "FALSE" for each of the statements below as it applies to you. There are no right or wrong answers. We are interested in how *you* are most likely to respond.

No	Statement	Response	
1	I try to ignore thinking about the situation	TRUE	FALSE
2	I try to think of other things to distract me from thinking about the situation	TRUE	FALSE
3	I try not to think about things bothering me	TRUE	FALSE
4	Problems don't just go away by themselves, therefore I deal with problems	TRUE	FALSE
5	I try to avoid having to deal with the situation	TRUE	FALSE
6	I don't walk away from difficult situations I should be dealing with	TRUE	FALSE
7	I find out as much as I can about the situation in order to deal with it	TRUE	FALSE
8	I deal with tension between me and other people because it won't go away by itself	TRUE	FALSE
9	I deny the existence of concerns I have about a situation	TRUE	FALSE
10	I don't shrug off the responsibility to deal with problems in my life	TRUE	FALSE
11	I try to find a way out of having to deal with it	TRUE	FALSE
12	I tell myself that this is just my fate, I can't do anything about it	TRUE	FALSE
13	I deal with unpleasant circumstances by wishing they will just go away	TRUE	FALSE
14	I try not to think about how bad it makes me feel	TRUE	FALSE
15	I don't delay dealing with a situation	TRUE	FALSE

16	I try not to think of the negative aspects of the situation	TRUE	FALSE
17	When things bother me, I don't deny it to myself	TRUE	FALSE
18	I try to ignore memories of difficult situations	TRUE	FALSE
19	I don't deny it when there is tension between me and other people	TRUE	FALSE
20	I try not to think about previous bad experiences	TRUE	FALSE
21	I deal with conflict between me and other people rather than ignoring it	TRUE	FALSE
22	If I pretend that the problem doesn't exist it will go away by itself	TRUE	FALSE
23	I try to forget that it ever happened	TRUE	FALSE
24	In difficult situations, I pretend it didn't happen	TRUE	FALSE
25	I think of excuses why I shouldn't deal with the situation	TRUE	FALSE
26	In difficult situations with others, I tend to just leave it and walk away	TRUE	FALSE
27	I pretend that there is no tension between me and others even when there is tension	TRUE	FALSE
28	I deal with the situation immediately	TRUE	FALSE
29	I prefer dealing with a problem rather than making up excuses why I shouldn't have to deal with it	TRUE	FALSE
30	I consciously overlook things which are difficult to deal with	TRUE	FALSE
31	I try to distract myself by thinking about other things	TRUE	FALSE
32	I discuss difficult situations with the people involved	TRUE	FALSE
33	I complain about the situation but don't actually do anything about it	TRUE	FALSE
34	Rather than dealing with conflict, I hope it will go away	TRUE	FALSE
35	I try to forget about unpleasant things I have experienced	TRUE	FALSE
36	When experiencing an unpleasant situation, I tend to focus on fond memories only and disregard negative feelings	TRUE	FALSE
37	I just hope the existence of concerns I have about a situation will go away	TRUE	FALSE
38	I pretend something else is wrong, instead of focussing on the actual problem	TRUE	FALSE

39	I think to myself that I have to deal with the situation, but don't do anything about it	TRUE	FALSE
40	Under pressure, I prefer to sit tight and hope it all goes away	TRUE	FALSE
41	I usually just ignore things and hope that time will somehow sort them out	TRUE	FALSE
42	Rather than dealing with unpleasant things, I tend to look for something to distract me	TRUE	FALSE
43	If something upsets me, I try to just blot the whole thing out of my mind	TRUE	FALSE

Scoring Key of the GSAQ:

Factor 1: **General Avoidance**

Give 1 point for TRUE and 0 points for FALSE for items:
1, 5, 9, 11, 12, 13, 22, 24, 25, 30, 33, 37, 38, 39, 40, 41, 42

Give 1 point for FALSE and 0 points for TRUE for items:
4, 6, 7, 10, 17, 29

Factor 2: **Emotional Avoidance**

Give 1 point for TRUE and 0 points for FALSE for items:
2, 3, 14, 16, 18, 20, 23, 31, 35, 36, 43

Factor 3: **Conflict Avoidance**

Give 1 point for TRUE and 0 points for FALSE for items:
26, 27, 34

Give 1 point for FALSE and 0 points for TRUE for items:
8, 15, 19, 21, 28, 32

Appendix 9: Subsidiary parcel-based confirmatory factor analysis for Sample 4 (United Kingdom)

Table 34: Subsidiary parcel-based CFA for Sample 4 (United Kingdom)

	Sample 4 (United Kingdom)		
	Number of Factors		
	1	2	3
χ^2	126.89	62.99	37.26
df	27	26	24
χ^2 *p*	0.000	0.000	0.041
CFI	0.843	0.942	0.979
TLI	0.790	0.919	0.969
RMSEA	0.141	0.088	0.055

χ^2 = Chi-square
df = degrees of freedom
p = Significance level of χ^2 (*p* <0.05 means the model fit is unsatisfactory)
CFI = Comparative Fit Index (>0.90 is good; >0.95 is very good)
TLI = Tucker-Lewis Index (>0.90 is good; >0.95 is very good)
RMSEA = Root Mean Square Error of Approximation (<0.08 is good; <0.05 is very good)

The subsidiary analyses described earlier in Chapter 3: Confirmatory Factor Analysis for Sample 4 (United Kingdom) is summarised in Table 34. All the regression weights for the three-factor solution in both samples were significant at the $p < 0.001$ level. The modification indices suggested minor modifications to the model which did not align with the original EFA analyses, and overall the results for the three-factor model suggest that different parcel combinations can indeed affect the goodness-of-fit indices. The results also confirm that the three-factor model provides the best fit, and generating parcels with improved internal consistency did not improve the model fit for this sample. The results did suggest that the two-factor model provides an adequate fit apart from χ^2, which approached significance for Sample 4 ($p = 0.041$). However, the χ^2_{diff} test indicated that the three-factor model provides a significantly better fit than either the one or two-

factor models for Sample 4 ($\chi^2_{diff}(3) = 89.63$, $p < 0.001$ and $\chi^2_{diff}(2) = 25.73$, $p < 0.001$, respectively).

Appendix 10: Concurrent Correlation Table for Sample 3: New Zealand working adults

	GSAQ General Avoidance	GSAQ Emotional Avoidance	GSAQ Conflict Avoidance	GSAQ Total Avoidance 1	PCI Proactive Coping	DASS21 Depression	DASS21 Anxiety	DASS21 Stress	DASS21 Total	CSQ3 Detached/Emotional	I-RS Rumination	PSI Have Symptom	PSI Doctor Symptom	PSI Total
GSAQ General Avoidance	1													
GSAQ Emotional Avoidance	.426**	1												
GSAQ Conflict Avoidance	.711**	.338**	1											
GSAQ Total Avoidance	.921**	.689**	.815**	1										
PCI Proactive Coping	-.560**	-.210*	-.577**	-.559**	1									
DASS21 Depression	.339**	.052	.288**	.294**	-.465**	1								
DASS21 Anxiety	.278**	.170*	.217**	.280**	-.290**	.595**	1							
DASS21 Stress	.295**	.076	.269**	.272**	-.308**	.652**	.657**	1						
DASS21 Total	.349**	.112	.298**	.324**	-.407**	.860**	.854**	.894**	1					
CSQ3 Detached/Emotional	-.460**	-.006	-.364**	-.368**	.537**	-.637**	-.414**	-.591**	-.633**	1				
I-RS Rumination	.395**	.075	.344**	.350**	-.435**	.591**	.466**	.527**	.607**	-.750**	1			
PSI Have Symptom	.357**	.207*	.321**	.368**	-.255**	.424**	.562**	.450**	.547**	-.448**	.437**	1		
PSI Doctor Symptom	-.174*	-.041	-.190*	-.169*	.138	-.007	.060	.013	.025	.037	-.047	-.198*	1	
PSI Total	.271**	.185*	.229**	.285**	-.188*	.414**	.581**	.449**	.550**	-.424**	.408**	.893**	.265**	1

******Correlation is significant at the 0.01 level (2-tailed).
*****Correlation is significant at the 0.05 level (2-tailed).
a. Listwise *N*=147

Appendix 11: Concurrent Correlation Table for Sample 4: United Kingdom university students

	GSAQ General Avoidance	GSAQ Emotional Avoidance	GSAQ Conflict Avoidance	GSAQ Total Avoidance	PCI Proactive Coping	DASS21 Depression	DASS21 Anxiety	DASS21 Stress	DASS21 Total	CSQ3 Detached/Emotional	I-RS Rumination
GSAQ General Avoidance	1										
GSAQ Emotional Avoidance	.367**	1									
GSAQ Conflict Avoidance	.614**	.171*	1								
GSAQ Total Avoidance	.927**	.622**	.726**	1							
PCI Proactive Coping	-.460**	-.142	-.335**	-.432**	1						
DASS21 Depression	.324**	-.028	.123	.229**	-.306**	1					
DASS21 Anxiety	.179*	-.068	.119	.123	.079	.470**	1				
DASS21 Stress	.128	-.039	.035	.077	-.027	.530**	.572**	1			
DASS21 Total	.258**	-.053	.112	.175*	-.112	.820**	.810**	.848**	1		
CSQ3 Detached/Emotional	-.321**	.072	-.231**	-.242**	.352**	-.510**	-.284**	-.398**	-.487**	1	
I-RS Rumination	.322**	-.053	.149	.226**	-.177*	.480**	.382**	.471**	.541**	-.570**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

a. Listwise *N*=172

Appendix 12: Extended description of the factor loadings referred to in Table 20 and sections 5.4.1 and 5.4.2

5.4.1 Sample 5 – Balearic Islands student sample (Spanish)

The terminal three-factor solution for Sample 5 yielded a similar item list for Factor 2 (Emotional Avoidance) compared to the original GSAQ factor structure, and added item 1 (0.522) from the original General Avoidance factor. Factor 3 (Conflict Avoidance) lost items 8, 19 and 27 due to no-loadings for these items, and item 34 loading on Factor 1 (0.638), leaving items 15, 21, 26, 28 and 32 to load on Factor 3. Factor 1 (General Avoidance) retained nine of its original 21 items in this sample, including item 5 which double loaded very similarly on Factor 1 (0.337) and Factor 3 (0.336). Item 1 loaded on Factor 2 (Emotional Avoidance) and five items (9, 10, 17, 37, and 38) originally from Factor 1 (General Avoidance) did not load on any of the factors. Items 6, 7 and 30 from Factor 1 loaded exclusively on Factor 3 (0.417, 0.327, and 0.351 respectively) and item 33 double loaded on Factor 1 (0.374) and slightly higher on Factor 3 (0.398). Items 4, 25, 29, and 39 also double loaded, but loaded much stronger on Factor 3 (0.415, 0.461, 0.537, and 0.463 respectively) than on the original Factor 1 (0.309, 0.335, 0.317, and 0.304 respectively).

5.4.2 Sample 6 – Canary Islands working adults sample (Spanish)

Reviewing the item-based EFA for the total Sample 6 data shows that Factor 2, Emotional Avoidance, remained fairly stable in this sample too. Item 23 loaded slightly higher on Factor 3 (0.394) than on the original Factor 2 (0.358) and all the other ten items were retained on the original Factor 2. Conflict Avoidance (Factor 3) integrated almost completely with Factor 1 (General Avoidance), except for items 19 and 8 which did not load on any factors, and item 27 (0.384) which remained on the third factor. Items 15, 21, 28 and 32 loaded exclusively on Factor 1 (0.532, 0.630, 0.467, and 0.439 respectively). Item 34 loaded higher on Factor 1

(0.556) than on Factor 3 (0.452) and item 26 loaded slightly higher on Factor 1 (0.445) than on Factor 3 (0.423).

Only fifteen of the original Factor 1 (General Avoidance) items remained on Factor 1. Items 7, 9 and 17 did not load on any of the factors. Item 1 loaded exclusively on Factor 2 (Emotional Avoidance: 0.534). Items 22, 24 and 37 loaded exclusively on Factor 3 (Conflict Avoidance: 0.469, 0.405 and 0.340 respectively), while item 41 loaded marginally higher on Factor 3 (0.535) than on Factor 1 (General Avoidance: 0.529). Ten of the remaining fifteen items (4, 5, 6, 10, 11, 12, 29, 33, 38, and 39) on Factor 1 (General Avoidance) loaded exclusively on Factor 1. Items 25 and 30 loaded higher on Factor 1 (General Avoidance: 0.580 and 0.489) than on Factor 3 (0.351 and 0.358). Items 13 and 40 loaded marginally higher on Factor 1 (0.436 and 0.461) than on Factor 3 (0.402 and 0.437). Item 42 loaded higher on Factor 1 (0.533) than on Factor 2 (Emotional Avoidance: 0.310).

Appendix 13: Briefing form, questionnaires and debrief used during the Cardiovascular study

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PLEASE READ THIS INFORMATION

You are invited to participate in a part of a research project aimed at assessing the differences in opinions between different generations and genders relating to the appropriateness of certain videos being freely available on the internet or television.

Your involvement in this project will be to complete all the questionnaires provided. You will be required to complete the viewing of short video clips, which will be explained by the researcher, and during the experiment, your blood pressure and heart rate will also be measured at various times throughout the experiment. You have the right to withdraw from the project at any time, including withdrawal of any information provided.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation: the identity of participants will not be made public without their consent. To ensure anonymity and confidentiality, any information you have provided will be stored under secure password protection only known to the researcher and research supervisor. Your personal details will not be linked to your responses to ensure anonymity. Withdrawal from the project will not affect any future interactions with the University of Canterbury. The anonymous raw data will be stored in a password-protected database for a maximum of two years post the completion of the doctoral research project.

Please allow between 15 - 30 minutes to complete this experiment.

The project is being carried out as a requirement for the degree Doctor of Philosophy by Lehan Stemmet under the supervision of Dr Derek Roger, who can be contacted at telephone number +64 (0) xx xxx xxxx or email Lehan@xxxxx.xx.xx or Xxxx@xxxxx.xx.xx respectively. They will be pleased to discuss any concerns you may have about participation in the project.

Please provide us with your email address which will be securely stored and only used to contact you for the purposes of this research.

Participants who complete all parts of the research will receive NZ$30.00 either via bank transfer or a cash payment. There are approximately 50 to 100 participants in this part of the research project.

The project has been reviewed and approved by the University of Canterbury Human Ethics Committee and Manukau Institute of Technology Ethics Committee.

CONSENT FORM

I have read and understood the description of the above-named project. On this basis I agree to participate as a participant in the project, and I consent to publication of the results of the project with the understanding that anonymity will be preserved.

I understand also that I may at any time withdraw from the project, including withdrawal of any information I have provided.

I note that the project has been reviewed ***and approved*** by the University of Canterbury Human Ethics Committee and Manukau Institute of Technology Ethics Committee.

NAME (please print): _____

*****Email address:_____

Signature: _____

*****Phone Number:_____

Date:_____

Yes, I would like a summary of the research:_____

Yes, I have completed the research and received payment:_____

***Please provide your contact details to allow for payment**

Appendix 13: Briefing form, questionnaires and debrief used during the Cardiovascular study *Continues /...*

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HR & BP Form

Participant Number:

Video Order

C - N	**1**
N - C	**2**

Baseline

SBP	
DBP	
HR	

Video C

SBP	
DBP	
HR	

Video N

SBP	
DBP	
HR	

Debrief

SBP	
DBP	
HR	

http://www.omronhealthcare.com/service-and-support/faq/blood-pressure-monitors/
http://www.omronhealthcare.com/wp-content/uploads/bp101.pdf

Systolic is the top number. It represents the pressure as your heart contracts to pump blood to the body.
Diastolic is the bottom number. It represents the pressure between beats, when your heart relaxes.

The following shows the different stages of hypertension (also known as high blood pressure) according to the American Heart Association:

	Systolic Blood Pressure	**Diastolic Blood Pressure**
Normal	≤ 120 mm	≤ 80 mm
Pre-Hypertension	121-139 mm	81-89 mm
Stage 1 Hypertension	140-159 mm	90-99 mm
Stage 2 Hypertension	≥ 160 mm	≥ 100 mm

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Demographics Form

Participant Number:

Please answer the following questions as accurately and honestly as possible by marking with "X" where appropriate. Your responses will remain anonymous. We only record your 'participant number' for the purposes of linking all your responses. This number will not be linked to your personal details.

Gender

Male	Female

Age in years

Ethnicity

Your occupation

Please indicate your highest level of education

High School	Certificate	Diploma	Bachelors	Masters	Doctorate
Other (please specify)					

Are you currently taking any medication?

Please specify	

Do you have any medical conditions we should be aware of?

Please specify	

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Post Video Questions

Participant Number:

Please answer the following questions as accurately and honestly as possible by marking with "X" where appropriate. Your responses will remain anonymous. We only record your 'participant number' for the purposes of linking all your responses. This number will not be linked to your personal details.

1. What attracted your attention most during these videos

	What stood out for you?
Video C	
Video N	

2. Have you seen this video clip before?

Video C	Yes	No
Video N	Yes	No

3. Did you recognise any of the people in the scene?

Video C	Yes	No
Video N	Yes	No

4. Do you think this type of video is appropriate for television?

Video C	Yes	No
Video N	Yes	No

5. Do you think this type of video should be freely available on the internet

Video C	Yes	No
Video N	Yes	No

6. How stressful did you find this video?

	Not at all stressful									Very stressful
Video C	1	2	3	4	5	6	7	8	9	10
Video N	1	2	3	4	5	6	7	8	9	10

7. If you were in this situation, instead of only watching the video, how stressed would you feel?

	Not at all stressed									Very stressed
Video C	1	2	3	4	5	6	7	8	9	10
Video N	1	2	3	4	5	6	7	8	9	10

8. Do you think the people in this video could have handled it in a better way?

Video C	Yes	No
Video N	Yes	No

9. Have you ever been in a situation like this?

Video C	Never	Rarely	Sometimes	Quite often	Very often
Video N	Never	Rarely	Sometimes	Quite often	Very often

10. Do you think this kind of interaction is appropriate among mature adults?

Video C	Yes	No
Video N	Yes	No

11. Do you think this kind of interaction makes the world a better or a worse place to live in?

	Worse									Better
Video C	1	2	3	4	5	6	7	8	9	10
Video N	1	2	3	4	5	6	7	8	9	10

12. How often do you think this type of interaction happens in real life?

	Never									Very often
Video C	1	2	3	4	5	6	7	8	9	10
Video N	1	2	3	4	5	6	7	8	9	10

Appendix 13: Briefing form, questionnaires and debrief used during the Cardiovascular study *Continues /...*

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DEBRIEFING SHEET

Thank you for taking the time to help me with this research project.

The main purpose of this experiment is to assess the relationship between avoidance coping and cardiovascular activity by measuring your heart rate and blood pressure in response to the specific videos you viewed. It is believed that coping strategies are related to cardiovascular responses, and we are interested in how this relationship works specifically in the case of avoidance coping. The videos you have viewed were selected to induce psychological coping strategies and physiological reactions and in this instance, the cardiovascular response to a challenge.

The original purpose of the experiment indicated that we are assessing the differences in opinions between different generations and genders relating to the appropriateness of certain videos being freely available on the internet or television. However, the combination of videos viewed and questionnaires completed actually helps us to assess the relationship between cardiovascular activity and a specific coping strategy, usually termed avoidance. The reason why researchers use this technique (usually termed deception) is to ensure that there is a lesser chance of response bias. It provides us with a more accurate view of how people actually respond to challenging situations, and specifically their use of avoidance coping and how it relates to cardiovascular activity in this instance.

It is believed that avoidance coping is an important indicator for various physical and psychological health outcomes; however, there are few reliable measures of avoidance coping to test the relationship between physical and psychological health accurately. The findings from this research project will aim to guide future research and clinical practice in the fields of coping, stress and health.

If you are experiencing any symptoms of stress, or any other health-related symptoms, please do not hesitate to contact your local doctor or your local qualified and accredited mental health practitioner. There are various counselling and psychological services listed in your local yellow pages usually under the headings "Counselling", "Psychologists", "Psychotherapists", "Doctor", "Emergency Services". Alternatively, you may also search for local health professionals on the internet using for example Google.com and search for, for example: "Doctor, Christchurch". If you are working for a company with an EAP service, please contact your EAP representative and if you are a student, you could contact the student support services.

You are welcome to ask the researcher questions about the experiment by contacting the researcher or research supervisor on the contact details below or via the Department of Psychology at the University of Canterbury, New Zealand.

You may withdraw your participation, including withdrawal of any information you have provided at this point if you choose to do so. Hereafter the data you have provided will be stored anonymously for a maximum of two years after the completion of the doctoral research project. Because it is anonymous, it cannot be retrieved after it has been added to the data collected from other participants.

There are between 50 and 100 participants in this part of the research project and participants who complete all parts of the research will receive NZ$30.00 either via bank transfer or a cash payment.

If you are interested to receive a summary of the complete research report at the end of the completed project, please also leave your contact email address for us to forward you a copy and indicate that you would like to receive a copy of the research summary. Alternatively, the complete doctoral thesis will be available from the University of Canterbury Library if you wish to read more detail.

Many thanks for your participation.

Lehan Stemmet
Tel: +64 (0) xx xxx xxxx
Lehan@xxxxx.xx.xx or Xxxx@xxxxx.xx.xx

More info:
http://www.heartfoundation.org.nz/
http://www.omronhealthcare.com/service-and-support/faq/blood-pressure-monitors/

SOLI DEO GLORIA